

The Mining Journal

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LONDON, AUGUST 17, 1951

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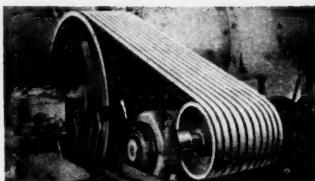
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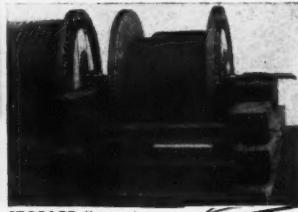


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NOTES AND COMMENTS

Some Salients in the Tin Outlook

There are many factors contributing to the uncertainty which surrounds the present outlook for tin production and prices, most of which derive fundamentally from ignorance regarding the present and future policy of the U.S. which at any time might re-enter the free market, but in the meantime continue to take considerable quantities of concentrates and metal from Bolivian, Dutch and Belgian sources, outside of purchase in the free markets of Singapore and London.

The United States Government, which is the sole importer of tin into the country, normally purchases its metal through the G.S.A. and ceased to do so, according to Mr. Stewart Symington, after a date in March, until, at any rate, a lower world price so far not disclosed, is reached. But the bulk of their purchases are of concentrates through the R.F.C. under contracts with Bolivia, Indonesia and the Congo. These contracts extend up to the end of the year in the case of the Congo and probably Indonesia, while the Bolivian situation seems to be at present still under discussion. Incidentally, the first reactions in Bolivia regarding the offered price of 112c. per lb. are reported as being unfavourable. Production by the Texas Smelter during May and June has been declining; this may indeed be regarded by the United States authorities with complacency in view of the large stocks of metal held in the country: time will show. We get production figures regularly for Indonesia, but these do not reveal how much of the concentrates go to the U.S. and how much to Arnhem. Indonesian production, however, is at present showing a declining tendency comparable to that in Malaya. Congo shipments for the first half of the year reveal a substantial reduction in metal and a very small reduction in concentrate. The combined figures were 9,062 tonnes in the past six months as against 9,525 tonnes in the first half of 1950. If the concentrates be reduced to metal on an assumed basis of 70 per cent tin metal, we get a total shipment of 5,371 tonnes metal equivalent, against 5,394 tonnes a year ago, making the total shipment in terms of metal for the half year 6,760 tonnes against 7,213 tonnes a year ago. Of the total concentrates exported in the half year January-June, 6,393 tonnes went to Belgium as compared with 6,978 tonnes in the comparable half year, but the exports to the U.S. increased substantially to 1,331 tonnes as against 710 tonnes. Incidentally, shipments to Kenya-Uganda

were 49 and 38 tonnes in the respective half years. While the imports into the U.S. thus increased, imports of metal declined by roughly the equivalent amount, the U.S. receiving 650 tonnes as against 1,219 tonnes in the first half of 1950, while the exports to Belgium were somewhat higher at 693 tonnes against 584 tonnes. Thus U.S.A. receipts in the first half of the year from the Congo were just about the same as in the first half of 1950. With concentrate shipments nearly doubled, the dependence of the Longhorn Smelter on high-grade concentrates to enable much of the low-grade Bolivian exports to be smelted, is once more exemplified. Whether the shipments from Indonesia to the Texas Smelter increased we have at present no data.

The important issue seems to be what will happen when the present concentrate contract expires at the end of the year. No doubt the Congo producers, like the Bolivians, would like a higher price than the present R.F.C. figure of 103c. per lb. of metal, and with their smelting plant at Hoboken, besides the Manono smelter, reduction plant presents no difficulty should the concentrate contract not be renewed. Bolivia already sends about half of its exports in terms of metal to Great Britain and no doubt the whole worthwhile output could be accommodated here, but as regards Bolivia the situation is complicated by the political situation. The American Government is naturally desirous of maintaining some kind of economic stability in Bolivia and maintaining its commercial dominance in the country. Whether the present temporary buying price of 112c. is sufficient to maintain the present Bolivian production and with it the political stability of the administration there, time alone will show, but it is quite possible that America will have either to raise its buying price, or subsidize Bolivia in some shape or form so as to ease the financial strain. If the U.S. authorities continue their recent policy of seeking to bring about a decline in the free market tin price, they seem to risk losing some, at any rate, of the concentrates on which the Longhorn Smelter depends and so reducing its output, which would make them ultimately more dependent on the free market. Secure in the possession of such large stocks, they may be willing to accept this outcome, but they would have to take into consideration whether any further substantial fall in the tin market may not rapidly reduce current world output and so bring about what they desire to avoid—a strengthening of the free market, and an upward movement in prices.

Steel Prices Up

The steep advances in iron and steel prices authorized on Monday last by the Minister of Supply, which range up to 25 per cent in some instances, confirm our previous impression that for some time past steel products have been sold below cost. Naturally, the Ministry has been reluctant to give any further impetus to inflationary pressure, but it has long been apparent that an adjustment of prices, which would take into account the sharp rise in raw materials, wages and transport costs, was inevitable, and the longer it was delayed, the more serious the deficit incurred by the new State Steel Corporation.

In the matter of the steel subsidies, the Chancellor of the Exchequer has quite clearly taken a firm stand. We have been paying fantastic prices for imported steel which has been sold to the home consumer at the same price as home produced steel. Quite rightly the Government has now decided that consumers must now bear the full burden of this trading loss. There may be a case for other subsidies—as for instance the food subsidies—but in the present state of the nation's finances there is no room to countenance financial assistance to the consumers of iron and steel.

Of course, the impact of these advances upon the national economy will be severe. It will increase the cost of re-armament, and of all the capital re-equipment in progress or projected. Shipbuilding costs will rise, motor cars will cost more, coal prices, and railway fares may have to be increased, and there will be further pressure on the housewife's budget.

It is a doleful prospect but there is one consolation. Even at the higher level the steel price index will not rise above 230 compared with 250 for all commodities. Better still, British steel prices in general remain below Continental and U.S. quotations. There is no question of any substantial reduction in the immediate demand for British steel. An assured market exists for every ton that can be produced.

Mining in British Columbia in 1950

The preliminary estimate issued by the Department of Mines of British Columbia places the province's mineral production for 1950 at \$140,000,000, an increase of some \$7,000,000 over 1949. However, the chief factor in the increase has been higher prices obtaining for most metals. Following are the estimates of the value of the various items in the year's output. Placer gold, \$500,000; lode gold, \$10,600,000; silver, \$6,900,000; copper, \$10,200,000; lead, \$38,000,000; zinc, \$45,000,000; coal, \$10,500,000; structural materials, metals and minerals, \$15,800,000. Commenting on these figures the Hon. R. C. MacDonald, Minister of Mines, predicted that this year the province will surpass its 1950 output. He went on to say: "So long as we have a small population and resources in excess of our needs we can expect our raw materials to maintain us in a high standard of living, but it is to be regretted that the export of raw materials means less financial returns. For example, each ton of iron ore we export to Japan creates \$7 of new wealth for B.C., but if the ore were smelted and converted into steel here it would create for use seven times that amount of money."

In this connection, it is interesting to note that the Argonaut Co. Ltd., Vancouver, a subsidiary of the Utah Construction Co., San Francisco, the fourth largest iron ore producer in North America, has now nearly completed its development of the Quinsam Lake iron ore deposits, near Campbell River, and has announced that the first shipment of B.C. ores ever made to the Orient will probably leave this month for Japan. When the operation gets under way, within about 90 days of the first shipments, the company expects to export concentrated iron ore at the rate of 80,000 tons a month.

Australia

(From Our Own Correspondent)

Melbourne, July 30

Gold production in the Commonwealth for the first quarter of 1951 amounted to 205,555 f. oz., which is an increase of 8,372 f. oz., or 4.2 per cent, on production for the first quarter of 1950, and is the best yield for the March quarter since 1947. Western Australia was the principal contributor, and has shown a marked increase in output in comparison with previous years. Figures for 1951, to the end of May, give the State's production as 274,102 f. oz., compared with 223,562 f. oz., for the five months to May 31, 1950; production for the month of May was the highest for any month since June 1949, and amounted to 78,377 f. oz. Victorian production from January 1 to April 30, 1951, was 16,747 f. oz., a decrease of 105 f. oz. on the output for the corresponding period of the previous year. New South Wales, for the months of January and February, reported 6,979 f. oz., a fall of 914 f. oz. compared with the similar period in the previous year, and Queensland has also reported decreased production, the figures for the four months to the end of April being 26,607 f. oz., which is a decline of 877 f. oz. on the same period of 1950.

NEW SOUTH WALES

A recent computation of ore reserves in the Broken Hill mines is 12,500,000 tons of ore blocked out, a figure which is no doubt conservatively calculated, for the general custom is to exclude ore only partially developed, or exposed by diamond drill bores. Geological evidence places the potential future of Broken Hill at some 75,000,000 tons. In nearly 70 years of life, the field has produced about 70,000,000 tons of ore.

Extension of mining southward is centred in the development of New Broken Hill Consolidated, which is sinking toward depths of 4,000 ft. with the new main, and the air shafts, following diamond drilling results to depths of 3,500 ft. The new shafts are circular, and concrete-lined. The ore haulage shaft is 13 ft. 6 in. dia., the service shaft 20 ft. dia., and the ventilation shaft also 20 ft. dia.

The company is erecting a mill, which will make it independent of treatment of its ore at the mill of Zinc Corporation Ltd., and a diesel-electric power station is also being built, which will contain an initial plant of four 2,370 kW Diesel-driven alternators.

VICTORIA

Morning Star (G.M.A.) Mines N.L., one of the Gold Mines of Australia group, should attract increasing attention in the future by reason of its plans for deeper development, and reduction of costs by the substitution of electric power for wood fuel. To finance the electrification of the mine, and provision of other equipment, the company will raise capital from £A80,000 to £A100,000. The electric power will simplify development and mining at depth, and will effect an operating saving of £20,000 per year. Ore reserves have been estimated at 61,000 tons with a head value of 14 dwt. gold per ton. In the year 1950, the mine produced 11,394 f. oz. of gold and paid £A50,000 in dividends.

Amongst new plant items to be provided are a winder for operation from deep levels and a new head-frame. Present producing depth is about 2,000 ft., but exploratory diamond drilling has been carried to about 2,400 ft. from surface. Prospects of extension of reefs and values in depth are regarded very favourably. The ore is free milling and a high recovery is made by amalgamation.

British Association's Edinburgh Meeting

An outstanding feature of the meetings of the British Association, held in Edinburgh from August 8 to 15, was the television transmission of the opening ceremony in the M'Ewan Hall, where the Duke of Edinburgh gave his presidential address, to the Usher Hall. It was the first public demonstration in Britain of large screen television, using a radio link. Not a hitch marred the experiment which was a great success. In addition to the public lectures there were fifteen sections holding sessions daily. At these sectional meetings there were several papers dealing with physiological problems of mining.

Sir Andrew Bryan, a member of the National Coal Board and until recently H.M. Chief Inspector of Mines, speaking on "Accidents in Mines," said that since 1940 there had been a more or less continued fall in fatal accidents to 468 in 1948, 460 in 1949 (the lowest on record) and 493 in 1950 despite a disastrous fire at Cresswell, in Derbyshire, resulting in 80 deaths, and the Knockshinnoch disaster, resulting in 13 deaths. Serious non-fatal accidents had declined steadily, the average annual number in each successive decade since 1900 being 5,700, 5,000, 4,400, 3,200, and 2,020 respectively. The bigger the average size of the pit the higher was absenteeism, and there was a similar trend with the accident rate—the bigger the average size of the pit the higher the accident rate.

"Whatever the public may think about miners and whatever may be attempted in the way of reconstructing the industry," Sir Andrew added, "coal will always be got by small groups of men working in comparative isolation and remote supervision. The need to understand the extent to which each man feels he is a member of the group, and the extent to which the groups identify themselves with the pit as a whole, is one of the most urgent investigations that confronts the industry to-day. The recorded facts alone can suggest how the need should be met."

MECHANISATION AND THE DUST PROBLEM

Dr. C. M. Fletcher, director, Pneumoconiosis Research Unit, Llandough Hospital, in paper on the effects of dust inhalation on the working capacity of miners, said that physiological studies undertaken by the Research Unit had shown that simple pneumoconiosis (diagnosed radiologically) was not on the average seriously disabling and there was no association between the severity of disability and the severity of the radiographic abnormalities. It was suggested that the abnormal respiratory mortality figures of coalminers might be due to the effects of coal dust increasing respiratory mortality while masking the normal clinical course of tuberculosis. Further investigation was required to show whether miners, exposed to coal dust, with or without radiological signs of simple pneumoconiosis or not, had a greater tendency to develop respiratory disability than men who were not so exposed.

Dr. A. Meiklejohn, lecturer in Industrial Health, Glasgow University, dealing with "Coalminers' pneumoconiosis: employment problems of the disabled," said that mechanization had reproduced the dangerous dusty conditions of the primitive underground working of a century ago. Reluctantly he was compelled to one conclusion, namely, that almost the entire responsibility for the continued employment of pneumoconiotic coalminers must be accepted by and within the industry. "The clamant demand is for more coal—higher and greater production. To this end mechanization and more mechanization and more men to work the machines is the invariable answer. Dare we pause for a moment to

examine the situation? Are we quite certain that in some mines more coal-cutters and longer conveyor belts are not indirectly diminishing output by the deleterious effects on the men.

Dr. C. G. Gooding, Principal Medical Officer, Scottish Division, National Coal Board, spoke of the effect of lighting on the health and working efficiency of miners. Inadequate lighting in the past, especially at the coal face, he said, had been responsible for the development in a considerable number of mines of the disease Miners' Nystagmus. This disease, although less common than it was thirty years ago, had resulted in the disablement, for periods of one or more years, of over 14,000 miners in the decade of 1938-47. In some parts of the country (in Scotland for example) the occurrence of disabling disease appeared to have been checked. It was not, however, possible to say it had been abolished, since the disease might exist in latent form which might be converted to overt disability in adverse social conditions. While it was possible with the best lighting available to-day to control miners' nystagmus, it would be a great mistake to think of mine lighting only in its relation to this disease. A number of other benefits are considered likely to result from improved lighting in mines. Probably the most important benefit they might expect was the improvement in physical comfort and psychological temper. A sufficient improvement in lighting could convert mines into underground factories and could work a revolutionary change in the psychological climate of the industry. Increased comfort was a legitimate aim since that was closely associated with industrial efficiency.

GEOLOGY'S ROLE IN NORMANDY INVASION

The part which geological considerations played in the planning of the invasion of Normandy in 1944 was given by Professor W. B. R. King, F.R.S., in his presidential address to the geology section.

Professor King in his address entitled "The Influence of Geology on Military Operations in North-West Europe," pointed out that the conditions on the Normandy beaches caused a good deal of concern to the planning staffs.

Beaches in Britain, for example, had shown that most vehicles could not travel over outcrops of plastic clay or peat and were even liable to cut through a thin layer of sand and become mired in the soft underlying deposits. In the early days of planning air photographs showed the Normandy beaches evenly covered by sand although it was known that peats existed. However, after the storms of 1943 suspicious dark patches in the bottom of the runnels appeared suggesting that peat might be exposed. During the following six months large scale maps of the beaches were prepared indicating those parts which were unsuitable for the passage of assault vehicles, while a pre-invasion reconnaissance by commando volunteers confirmed the existence of out-cropping peat.

Geological considerations were also important in establishing the site of the Mulberry Harbour. In this instance it was revealed that the deep water entrance to the Mulberry Harbour was the result of the erosion of a gap through the old wave-cut platform during the time of low sea-level.

Professor King also drew attention to the fact that the presence of low flat-lying Jurassic limestones covered by loam made it possible to site and to construct, with remarkable speed, the necessary airstrips. These airstrips allowed fighter aircraft to be maintained near the front line thus helping to maintain the air superiority.

South African Platinum Metals

By A. GRAHAM THOMSON

The platinum industry has passed through many phases in the past 30/40 years and has gradually evolved from an alluvial to a lode formation basis in which it is recovered as a by-product of smelting and refinery operations. The rapid development of the South African industry described in the following article is the latest and one of the most important stages in the history of the platinum metals group.

For many years the potentialities of South Africa's mineral resources were overshadowed by gold and diamonds in the country's national economy. Since then, however, rapid strides have been made in the development and utilization of other indigenous materials. Particularly spectacular has been the recent expansion of platinum production, which has been stepped up from 56,687 oz. in 1943 to 120,000 oz. in 1949 and 256,385 oz. last year (*Mining Journal Annual Review, 1951*: page 85). Plans have recently been announced for a further programme of expansion, which is designed approximately to double the current output of Rustenburg Platinum Mines Ltd. To meet the cost of this programme, the capital of the company was recently increased from £606,000 to £808,000 by the creation of 202,000 new shares of £1 each. These new shares have been offered to the three shareholding companies in proportion to their holdings at the price of £12 a share.

In the light of these developments, it is interesting to recall that, shortly after the war, an eminent South African geologist, Professor B. V. Lombard, expressed the opinion that the two minerals which could be greatly developed were chrome and platinum, and that South Africa was the richest country so far as deposits of both these minerals were concerned.

THE MERENSKY REEF

The Union's platinum industry dates from 1924 when concentrates from a pan in the Lydenburg district were sent for analysis to Dr. H. Merensky, who confirmed their nature and started further exploration. Investigations showed that the basic rocks of the Bushveld Igneous Complex contained great quantities of the metal in concentrations which could profitably be mined at the prices then ruling. In September, 1924, A. F. Lombard discovered the Merensky Reef, which has been located at intervals over a distance of about 100 miles in the Lydenburg and Pietersburg districts, about 180 miles in the Brits and Rustenburg districts, and some 40 miles in the Potgietersrust district. This reef is a band of gabbroidal rock containing platiniferous sulphides, which varies in thickness from a few feet to over 30 ft. and usually carries a thin chromite layer. Where the band is thin, it carries platinum throughout, but in places where the development is thicker, the pay-zone is limited to part of the band. Average values of platinum metals in the Lydenburg district are low, being about 2 dwt. per ton over a large area tested. In Rustenburg, the value varies in selected areas between 5 and 7 dwt. per ton over stoping widths of about 30 in. through stretches measuring 5,000 to 18,000 ft. along the strike and several hundred feet along the dip. The proportions of palladium to platinum in the Lydenburg and Rustenburg deposits vary from 12 to 24 per cent palladium and 66 to 78 per cent platinum. In the Potgietersrust deposits the proportion of palladium is much higher.

The beginning of production in South Africa coincided with the world platinum slump. For many years the Union was at a serious disadvantage compared with Canadian and Russian producers, owing to the relatively high cost of production resulting from difficulties encountered in reducing the complex ores from the

Transvaal lode deposits. Of the various companies which started operations on the reef, the only survivor was Rustenburg Platinum Mines Ltd. In 1949, however, the production of platinum was started in the same district by the Union Platinum Mining Co. Ltd., whose ore reserves have been estimated at 4,800,000 tons, capable of permitting 32 years milling at the rate of 150,000 tons per annum. By an agreement ratified in December, 1949, Rustenburg Platinum Mines Ltd. acquired the whole of the assets of the Union Platinum Mining Co. Ltd. The combined undertaking has a total milling capacity of 73,000 tons per month. The smelting furnace at the Rustenburg section was rebuilt and is capable of dealing with the current output of both sections.

PROBLEMS SUCCESSFULLY SOLVED

Metallurgists in South Africa have successfully solved the problems associated with the Merensky Reef, where both oxidized and sulphide ores occur. Rustenburg Platinum Mines Ltd. has extracted the oxidized ore from its mine over a long stretch of strike and now draws its ore supplies from the sulphidic zone. The reduction treatment comprises treatment over stakes and tables, gravity concentration, followed by flotation. The flotation concentrates are smelted on the property in a blast furnace to produce a matte containing copper and nickel. This matte is enriched by converting and shipped to London for refining and sale, along with crude metallies obtained by gravity conversion. In order to keep pace with the expansion of South African production, Messrs. Johnson, Matthey & Co. Ltd. have extended their refinery plant. In the course of the current year this company's Brimsdown Works should be turning out refined metals in step with the much increased mine output.

POSITION OF PLATINUM COMPLETELY TRANSFORMED

Excluding the U.S.S.R. (whose current production is unknown), South Africa may become the world's largest supplier of platinum once the new programme of expansion has been completed. The decision to proceed with this very ambitious programme reflects the confidence with which the long-term outlook for the platinum metals is viewed. The position of platinum has been completely transformed since the days when the collapse of world prices proved calamitous to South Africa's early hopes. The range of uses is steadily widening. To-day, the platinum group metals have become industrial materials of the utmost strategic importance and, during the past decade, the jewellery industry has ceased to be the largest consumer of these metals.

Nowadays, the most extensive field of application is in the electrical industry. The numerous electrical applications of the platinum group are based on their resistance to oxidation, sulphidation, spark erosion, high temperatures, and their good mechanical properties. Certain special applications also depend on their resistance versus temperature relationships or on definite thermoelectric properties. Platinum, either pure or

hardened with percentages of ruthenium or iridium, is employed for contacts in voltage regulators, thermostats and relays, and the two alloys are used for contacts in high-tension magnetos, which are of particular importance in aircraft. Spark-plugs equipped with small-diameter platinum-alloy electrodes were extensively used during the war owing to their long life and high resistance to fouling.

CHEMICAL APPLICATIONS

The chemical applications of the platinum group of metals, which are also of major importance, are largely a consequence of the high catalytic activity, their resistance to corrosion, and resistance to oxidation at high temperatures, together with resistance to molten oxides and silicates. Of the catalytic uses, the production of nitric acid by the oxidation of a mixture of synthetic ammonia and air by passing it through a red-hot rhodium-platinum alloy gauze ranks first in strategic importance. Platinum is also used as a catalyst in the manufacture of sulphuric acid by the oxidation of sulphur dioxide to sulphur trioxide. Palladium and platinum are excellent catalysts for both hydrogenation and dehydrogenation.

Platinum and iridium-platinum are suitable for insoluble anodes in various electroplating processes, including the recovery of metals from waste solutions. Platinum rupture discs are employed for the safe handling of corrosive liquids and gases. Chemical laboratories use platinum for crucibles, electrodes and other equipment, and with the use of microchemical technique, many new pieces of platinum equipment have come into production.

These examples are sufficient to indicate the extent to which the precious metals of the platinum group have been transformed into industrial materials of critical importance in war and peace. In view of the pressure of rearmament on available supplies, the expansion of the South African output is a welcome and timely contribution to Commonwealth defence.

Professor C. W. Biccarr-Jeppe has pointed out that although the known reserves of platinum in the Merensky Reef are immense, the grade, on the whole, is low. The exploitation of platinum deposits on a large scale is, therefore, dependent on two factors, namely an increase in the demand for platinum and a reasonably high price for the metal. Both these conditions have been fulfilled and it may be anticipated that rearmament will keep demand and prices at satisfactory levels for a considerable time.

FUTURE PROSPECTS FOR PLATINUM METALS

Examining future prospects from a more long-term standpoint, new uses for the platinum metals continue to be developed and in the absence of a world-wide recession in industry a steady demand for the platinum metals at reasonable prices should be ensured. The high prices of the platinum metals is perhaps the most vulnerable point of the group, since there is an obvious danger that the cost factor might encourage the substitution of cheaper materials for certain applications, even at some sacrifice of efficiency. It is noteworthy, however, that so far the prices of the platinum metals have not risen proportionately to those of most critical materials, so that relatively platinum has actually gained in this respect. Since the effects of recent increases in South African production have not yet been fully reflected in sales, platinum should be in a strong position to resist the upward pressure on prices. Producers may, therefore, have an opportunity of consolidating and further extending the new outlets for the platinum metals which have been developed in recent years.

REVIEWS

The Geology and Mineral Resources of the Fraser's Hill Area, Selangor Perak and Pahang, Federation of Malaya, with an account of the Mineral Resources.—

By F. W. Roe. Pp. 138, illustrated, with a coloured geological map. 10 in. x 7½ in. Price \$56.00. Obtainable from the Director, Geological Survey, Federation of Malaya, Batu Gajah.

Memoir No. 5 of the New Series of publications of the Geological Survey of the Federation of Malaya describes the geology and mineral resources of rather more than 300 square miles of Malaya, approximately half of it being mountainous country of the Main Range. However, the mountains are traversed by one of the few roads which cross from the western to the eastern side of this great granite intrusive mass and so it has been possible here to study the granite in more detail than will be possible elsewhere. Furthermore, a branch road leading from the summit of the lowest point on the watershed gives access to Fraser's Hill, a hill station developed by the Government about thirty years ago.

Cassiterite (tin-ore) is the only mineral of economic importance in the area and the mineral has been mined for many years from alluvium in the valley land near the western fringe of the granite. Formerly also tin-ore was mined in the mountainous granite country in lodes which had been laid bare by the slicing of tin-bearing soil. The lodes are not being mined at the present day.

The author mentions 20,000 pikuls, about 1,200 tons, as the amount of alluvial tin-ore produced from the area in the year 1940 and thinks that the yearly production will rise to this figure during the next ten or fifteen years, after which the deposits will have been exhausted except that it may then pay to mine alluvium which is poorer in tin-ore than that which can now be economically worked. Describing the tin-ore *in situ*, the author tells us that the main type of mineralization consists of numerous small tin-bearing veins and stringers in granite, and, in the past, the soil and weathered rock containing less than 0.1 per cent of tin were profitably mined by ground-sluicing. This method uncovered rich lodes located at the intersection of zones of low-grade mineralization. However, in 1933 ground-sluicing had to be forbidden because of the great damage done by tailings which could not be kept imprisoned in the hills but were brought down by flood-water on to the plains. When all the alluvial deposits in the flats of the Kuala Kubu Lama area have been worked out, so making this flat land available for tailings retention, it may become possible again to permit ground-sluicing on the hills. This should give an annual production of 600 tons of tin-ore.

The author here describes all that is known of the lode-deposits in the hills. During the late nineteen-thirties over 4,000 ft. of adits were driven and more than 9,000 ft. of rock were diamond-drilled in the Peretak Hills, all in localities where rich lodes had already been worked. The ore bodies were found rarely to persist in the granite to depths of more than 350 ft. and no resumption of mining resulted. The area has a future because, owing to improved methods, it should be possible to mine profitably the lower grade "stringer" type deposit, and the author concludes that the future appears to depend more on whether low-grade deposits can be worked than on winning tin-ore from rich ore bodies. In his Figure 5 the author shows those areas where prospecting is likely to be successful.

The memoir is a valuable record of all that is known of this interesting mineralized area.

E. S. W.

Recent Metals and Minerals

By Professor A. G. QUARRELL (Sheffield University)

One of the functions of the metallurgist is to provide the engineer with the alloys he requires and without which many of the more spectacular engineering developments of this age would not be possible. Alloys with the highest possible strength-to-weight ratio are needed by the aircraft industry while the further development of the gas turbines depends upon the development of alloys with still better creep, fatigue and oxidation resistance at elevated temperatures. Although many of these needs are being met by continuous metallurgical improvement of alloys of known types, for some purposes it has been found necessary to develop entirely new alloys which hitherto have not been used industrially to any great extent. Some of the more interesting developments in these fields were reviewed by Professor Quarrell in his paper presented before the British Association 1951 (Edinburgh) meeting, August 8-15, an abstract of which appears below.

Many operations in the production and working of metals are only possible because the engineer provides the metallurgist with the powerful and sometimes elaborate machines that are required. It is equally true to say that many of the achievements of modern engineering would not have been possible had not the metallurgist developed new and improved alloys with properties suitable for the particular application. Whereas engineers at first based their designs upon known alloys they now tell the metallurgist what combination of properties is required to permit optimum, or at least efficient, performance of a given machine. The metallurgist is by now quite familiar with the technique and knows only too well that as soon as he has provided what he was asked for, more exacting demands will be made. Much of the metallurgical activity of this country is, in one way or another, concerned with meeting such demands.

ALLOY DEVELOPMENT STILL EMPIRICAL

For most of the five or six thousand years that metals have been used by man, metallurgy has been an art rather than a science and new alloys have resulted from chance observation rather than from deliberate effort. The last few years have seen vast strides in our understanding of the theory of alloys, but unfortunately the alloys which are most important technically are extremely complex and industrial practice still outstrips theoretical understanding. As a result, alloy development is still largely empirical and the rapidity with which existing alloys are improved and new alloys developed is due mainly to the magnitude of the effort being made and to the skill of the metallurgist in exploiting to the full any beneficial effects he observes as a result of changes in composition or in heat-treatment.

The needs of the aircraft industry for alloys of high strength-to-weight ratio suitable for air-frames and for alloys capable of withstanding high stresses at elevated temperatures in aero-engines have provided the incentive for the steady improvement of light alloys and of the special alloy steels. High strength aluminium alloys of the aluminium-zinc-magnesium-copper type are the most recent in the line of descent from Wilm's duralumin and form a large part of most modern aircraft. Greatly inform a large part of most modern aircraft. Greatly improved properties coupled with the low density of magnesium have become available in the last few years with the introduction of magnesium-zirconium-zinc alloys; the zirconium exerts a powerful grain refining effect, reduces the microporosity which was such an undesirable feature of earlier alloys and facilitates both hot and cold working.

Alloys suitable for use at elevated temperatures, as in the gas turbine, have been the subject of much discussion recently and on the whole the tale is one of steady improvement of known alloys rather than of the discovery of alloys of quite new types. Austenitic steels, particularly an alloy containing nickel, chromium, cobalt, tungsten, molybdenum and columbium, have given successful service as gas turbine discs under conditions of high stress and high temperature. Ferritic steels have been continuously improved and there are now alloys with creep and scaling

resistance almost approaching those of the austenitic steels and much more economic because of their lower alloy contents. Alloys based on the 80/20 nickel-chromium alloy with the addition of titanium and aluminium have proved most successful for use as gas-turbine rotor blading and continuous research by a large team has enabled the maximum working stress and temperature of such alloys to be raised repeatedly.

Copper alloys are also affected by the requirements of the gas turbine. Light alloys are extensively used for compressor blading, but the higher working temperatures involved in contemporary design is causing special interest to be shown in the complex aluminium bronzes. The single phase aluminium bronzes are similarly of interest in connection with the heat exchangers which form an essential part of long life gas turbines suitable for marine or land installations.

Full information has recently been published concerning the copper-nickel-iron alloys that were developed to meet the exacting requirements of the navy at war. Copper-base alloys containing up to 10 per cent nickel and up to 2 per cent iron can be worked almost as readily as copper by the techniques used by the coppersmith and yet have excellent resistance to the impingement type of corrosion attack caused by seawater containing entrapped air. These alloys have already shown their value for auxiliary piping in ships and in the U.S.A. at least, they are being advocated for use as condenser tubes.

Systematic study of the effect of alloying additions upon the properties of cast iron has considerably extended their field of usefulness but even more important, potentially, is the development of nodular cast iron which has resulted from a scientific study of the mode of graphite formation. By adding to the ladle small amounts of cerium or magnesium the iron can be made to solidify with the graphite in nodular instead of flake form and the mechanical properties are comparable with those of steel although the excellent casting characteristics of normal cast iron are retained.

TITANIUM POTENTIALITIES BEING INVESTIGATED

Some of the metals hitherto considered only as alloying elements are becoming of increasing interest as the possible bases of new systems of alloys. Thus, certain chromium-rich alloys have good creep properties at temperatures as high as 900 or 1,000°C although their practical use is prevented by their extreme brittleness at ambient temperatures. Again, in recent years ductile titanium has become available in reasonably large quantities for the first time and much effort is now being devoted to assessing its potentialities. Titanium is relatively light—it has a specific gravity of 4.5—its resistance to corrosion by chloride solutions is excellent; its tensile strength is greater than that of mild steel and can be further increased by alloying. Large quantities of titanium ores are available and if improved large-scale methods of extraction can be devised a new and important industry will almost certainly grow up, helping to relieve the shortage of those metals that we have for so long taken for granted.

Machinery & Equipment

New U.S. Ore Unloader

To meet the need for new handling equipment to unload ore at eastern United States ports, where increasing imports of iron ore from Liberia and South America are landed, the Dravo Corporation, Pittsburgh, Pa., has designed a new 15-ton unloader. It features the combined use of welded and riveted construction to combat the corrosive influences of salt water and salt air and special measures were taken to provide maximum performance with minimum maintenance requirements.

Under normal conditions, parts of the ore unloader may receive 20,000,000 to 30,000,000 stress cycles during its service life, according to W. B. MacLean of Dravo's Crane and Bridge Department. Describing the construction of the new unloader, Mr. MacLean said: "Seal welding which completely protects joints, is effective from the standpoint of corrosion resistance. But laboratory tests have shown fillet welded members have low fatigue value where subject to serious stress fluctuations or reversals. That is why it was decided to employ riveted construction for the runway portion of the unloader where fatigue is a vital factor. The tower of the unloader, however, is not subjected to stress fluctuations from live loads as great as those in the runway. Therefore, the tower of this new unloader was welded."

Principal parts of the 646-ton unloader consist of a centre tower section, approximately 125 ft. high, and a 210 ft. long horizontal runway, carrying the trolley track. The front, or apron, part of the runway extends over the harbour area so the bucket has access to ships' holds. The rear, or cantilever, part extends over the ore storage area. The weight of the moving trolley is 94 tons. Normal capacity of the bucket is 15 tons (30,000 lb.) of ore weighing 150 lb. per cu. ft. Two double rail tracks 46 ft. centre to centre accommodate the unloader which is carried on four 8-wheel trucks, one at each corner of the tower. The load is fully equalized over all wheels by a system of rocker bars and equalizing beams. These wheels are driven by independent 45 h.p. motors suspended beneath the sill structure.

The trolley runway consists of two modified Warren trusses 9 ft. 9 in. deep and 13 ft. 7 in. centre to centre, the main members being of 18 in. Mayari-R steel. At each panel point, there is a transverse yoke which supports the rail stringer. Lateral bracing is provided in the plane of the top chords. The rail stringers are canted inward on a slope of 1 in 40 to bring centre of pressure over centre of rail. The apron forms part of the runway and is similar in construction to the fixed portion; it is hinged and suspended on two sets of linked eyebars; thus, it can be raised by hoist to clear a ship's rigging while moving along the dock.

The hoist for raising and lowering the apron is on top of the tower. It is operated by an electric motor driving through worm gear and spur gear reductions to a welded steel rope drum. The drum is grooved to receive all of the rope in one layer. Safety interlocking by limit switches is provided between the latch and the hoist. The hoist is in a corrugated sheet metal house which also contains the electrical control panels and resistors for the tower travel motors.

The 125 h.p. trolley drive motors are mounted on welded steel cradles fastened to two points on the axle through anti-friction bearings and to a third point on the trolley frame through a flexible connection. Safety lugs prevent the trolley from dropping more than one inch in case of axle failure.

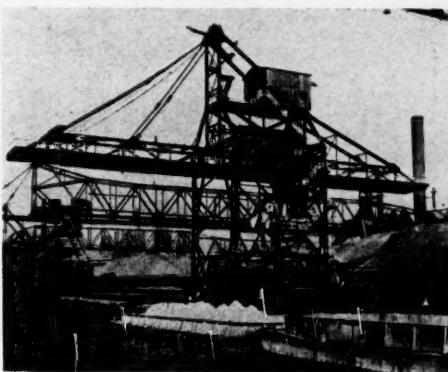
Although the main digging bucket is of 15 ton capacity, the trolley is arranged to accommodate a 7½ ton bucket

used in small hatches and clean-up work. A motor driven turntable, incorporated in the trolley frame, permits the operator to rotate the smaller bucket to suit digging conditions.

The 250 h.p. hoist motors each drive a welded steel grooved drum through double reduction gearing. As a safety measure against storms, two automatic self-aligning rail clamps are mounted on the centre of the sill structures. These can hold the unloader against a 106 m.p.h. storm without the brakes on the drive motors.

Each apron truss was shop-assembled and shipped in one piece; the fixed runway trusses were shipped in two pieces each and the tower structure was shipped knocked down.

Since the runway for this unloader is also used by other unloaders and ore bridges, erecting the new one without interfering with the operation of the other equipment presented a serious problem which was solved by erecting the unloader in an unused area beyond the end of the dock and off to one side of the runway. After



The new 15-ton ore unloader

completion, the structure was rolled endwise on specially prepared concrete slabs to the dock runway.

Design speeds of the several motions are: tower travel, 90 ft. per minute; trolley travel, 1,200 ft. per minute, balanced speed; bucket hoist, 250 ft. per minute; turntable 9 r.p.m.; and apron hoist, 7 minutes to hoist.

Design capacity of the unloader for free digging on an average cycle from ship's hold to storage pile is 1,100 tons per hour of iron ore weighing 150 lb. per cu. ft. Working with existing equipment to unload ships bringing in foreign ore, Mr. MacLean said that the new unloader helped to reduce turn-round time for ore boats and was a contributing factor in the ever-increasing volume of steel production utilizing foreign ores.

David Brown-Jackson Ltd. Hobbles Largest Gear

The largest export load ever consigned in one day by David Brown-Jackson Ltd. left Salford Works recently on four road transporters. The loads were a 25½ ton winder wheel, one of a set of eight, 11 ft. 6 in. dia., with a 3 ft. face width for South Africa, and two halves of a 27 ton cast steel gear—part of an order for three sets of winder gears supplied to the Broken Hill Pty. Co. and made from steel blanks supplied in halves. The diameter in this case is 13 ft. 6 in. with a 4 ft. face width. This is believed to be the largest gear ever hobbled in this country. The third item consigned was a 13 ton cast steel tyre for a cement mill in Jamaica.

Metals, Minerals and Alloys

The U.S. Government has taken an initial step in exempting metal prices from price controls. Raw asbestos, beryl, chromite, cobalt, columbite-tantalum concentrates, natural graphite, kyanite and related ores, manganese, domestic mercury and acid-grade fluorspar have received the necessary exemptions from the O.P.S. who say that the price increase will be much less damaging than a reduction of supply. This step may prove the thin edge of the wedge as regards present ceilings for the more important metals.

Copper.—The seriousness of the present copper strike in the U.S. stemming from the stoppage at the Garfield smelter, is becoming more widely recognized, and it is estimated that if both the major labour unions combine in a strike, some 95 per cent of the U.S. output would be cut off. This result would be so devastating that there is a tendency not to view the prospect tragically, in the belief that in the main the union's demands will be met. This, of course, would be a very serious blow to the President's general anti-inflation policy and would no doubt involve some advance in the domestic price of copper, which in turn would probably be reflected in the world price and a consequent increase in the Ministry of Materials price here. The Federal Mediation and Conciliation Service has sent one of its top-notchers, Mr. Sanyers, to Butte in an endeavour to deal urgently with this situation. This issue holds the copper stage at the moment. It is perhaps not surprising that fresh appeals are being made to Government to release substantial amounts from the stockpile.

Output and deliveries declined in the U.S. in July, probably due to the holiday season. The Copper Institute figures for crude were 82,718 s.tons (87,105 in June), with refined down to 93,258 s.tons from 105,127 in June. Deliveries were 101,095 s.tons against 114,103 a month earlier. Refined stocks rose to 68,045 s.tons (60,912 in June), being the highest figure since January, 1950. Outside the U.S., primary copper output was 115,255 s.tons (105,506 in June). Refined totalled 104,601 s.tons (94,696), while deliveries to manufacturers rose to 82,387 s.tons (78,941 in June).

It is reported from Santiago that the exchange of 25,000 tonnes of Chile copper for Argentine frozen meat was the subject of an important discussion between the Chilean Ambassador to the Argentine, and the President, Señor Videla. This reversion to a barter basis might obviate discussions of currency and its complications of an agreement.

The Northern Rhodesian output in May was 27,792 tons as compared with 28,251 tons in April.

The E.C.A. is to make available £3,000,000 to develop the Chibuluma property, seven miles to the west of Kitwe, with ore reserves estimated at 7,300,000 s.tons averaging 5.23 per cent Cu. and 0.25 per cent Co. A new company, Chibuluma Mines, has been incorporated in Northern Rhodesia recently.

Japanese output of rolled copper products in June rose to 7,387 tonnes.

U.K. stocks at the end of June improved to 116,907 tons compared with 107,501 tons a month earlier. Consumption of copper in all forms in June was 46,784 tons, making 282,460 tons for the half year, against 253,815 tons in the same period last year.

Lead.—Purchases of Mexican lead by the Ministry of Materials have been confirmed, though the quantities and dates of shipment are still somewhat variously reported. According to Reuter 10,000 tons have been purchased for fourth quarter shipment and 5,000 tons for the first quarter of next year, at the price of 22s. f.a.s. Gulf. It was believed in New York that purchases were around 10,000 tons. Consumers stocks in the U.S. at the beginning of June were reported by the Bureau of Mines to total 86,297 s.tons, the lowest stock figure since the beginning of November last year. August allocations were completed last week and the September figures are expected to be issued at the end of the month.

U.K. stocks showed a further decline in June, falling to 25,959 tons compared with 27,335 tons at the end of May. This is less than a month's consumption, which was 29,898 tons in June and 180,642 tons for the full half year.

Tin.—After a report that the Bolivian authorities had refused the R.F.C. offer of 112c. per lb. for tin, R.F.C. officials denied that negotiations had been broken off and it now appears that meetings will be resumed in the coming week.

Ruffled apparently by the foreign reaction against R.F.C.'s depressing tactics in tin, Mr. Stewart Symington told a Congressional Committee that foreign interests might ruin their greatest market, unless they were satisfied with fair profit only. In addition to further curtailment of non-essential uses in the U.S., American laboratories were, he declared, working hard for adequate substitutes. The R.F.C. dovecotes seem to have been disturbed by a report from Singapore that Bolivian concentrate might be sent there for smelting. This, however, is probably only kite-flying.

As a result of the heavy fall in tin prices since February, the Malayan Government has abandoned its "tin freeze" proposals. Presumably, the danger of inflation has diminished, but the question of the Budget situation at the end of the year is not judged too favourably locally and it is even thought that the Federal balance may come out \$S.40,000,000 on the wrong side. The reluctance of the administration to consult local opinion as regards its economic policy, thus antagonizing it and in the end getting nowhere with their novel propositions, is criticized in the local Press.

As evidence of the rising cost of living, several thousand Coolies employed on the Chinese mines have been given a 2 per cent increase in their cost of living allowance, subject to 26 days a month being worked. With tin selling between \$S.300/\$20 per picul, the workers are to get a 10 per cent cost of living allowance, with a rise of 2 per cent for every \$S.20 increase in the metal price. These increases are to continue unless the Government introduces a tin regulation scheme. Total tin stocks in the Federation at the end of June were computed as 6,691 tons against 6,829 tons in May.

The Billiton Co. have announced that the re-building of a tin smelter on Banca Island cannot be justified economically; even if the Indonesian authorities wish to reduce their dependence on Arnhem, there are always the Straits smelters to fall back upon.

The output of the Longhorn smelter in July showed a further drop from the first five months of the year (which averaged just over 3,000 tons a month) to 2,406 tons, making the seven months total 20,521 tons against 17,514 tons for the same period last year.

The Congo exports for the first half of the year are given in detail in "Notes and Comments."

U.K. stocks at the end of June are reported at 2,019 tons (1,850 tons at the end of May), with imports during

the month 406 tons and consumption 1,962 tons. The principal decline is in the tinplate industry which took 727 tons against 931 tons in the previous month.

The supply position in France is said to be not too difficult, but consumption is relatively small and consumers hold adequate reserves.

Zinc.—The N.P.A. has announced a 10 per cent cut-back in the August allocations, the requests for which were more than double the available supply. The American Zinc Institute reports July domestic production of slab as 78,995 s.tons shipments 83,346 s.tons, with stocks reduced from 15,791 s.tons at the end of June to 11,400 s.tons. Deliveries included 3,865 s.tons to Government stockpile. These withdrawals have gone up steadily since April when they were 2,821 s.tons. In France, a growing scarcity of zinc is reported in domestic output at around 6,200 tonnes, being still 25 per cent short of domestic needs. Consumers have now to hand over 40 per cent of their new requirements in sheets in the form of scrap.

U.K. stocks of zinc at the end of June improved to 34,221 tons compared with 31,954 tons at the end of May. Consumption during the month was 23,312 tons, and for the half year 142,807 tons (163,841 tons a year ago).

Aluminium.—Aluminium Ltd., the Canadian master company had a net income in the first half of the year of \$18,171,214 as against \$15,230,579 in the first half of 1950. Mr. McNelly Du Bois, of the Aluminum Company of Canada, has confirmed that an output of 80,000 s.tons of aluminium from the new Kitimat project has been scheduled to start in 1954.

Production of raw aluminium in Austria in the first five months improved to 8,737 tonnes (3,992 tonnes last year).

Antimony.—South African exports for the first five months of the year were more than 200 per cent above those for the same period of last year and were valued at £915,722.

U.K. antimony consumption in June was 599 tons of metal and compounds and 323 tons of scrap metal.

Asbestos.—*Asbestos*, of Philadelphia, reports that production of raw asbestos is at a maximum, while demand for all grades continues at a high level. Demand for all types of textiles continues, being especially keen for asbestos cloth. In brake lining sales continue to run about 50 per cent ahead of the same period last year, while equipment sales have been holding up well. Asbestos paper is slow, but demand is expected to improve. Saturated paper is slightly down, but demand still equals production. The millboard market is slow, but will improve. Good demand continues for high pressure insulation; sales may increase in the last half of the year. For low pressure material also, an improving market is expected. The market for shingles, roofing and siding has improved and may increase further. The call for corrugated and flat sheets is still far ahead of production. There is a strong market for tiles and the long-term outlook is for rapid growth in this industry; but the market remains seasonal.

Nickel.—E.I. du Pont de Nemours & Co., has developed a "white-brass" zinc-copper alloy, to replace nickel as a base for chromium finish, as the use of nickel itself is severely restricted by the Government. Composition of the alloy is four parts of zinc to one of copper, and it is electro-deposited from a cyanide bath, using special brightening agents.

Sulphur.—Mr. Menzies has given details of a scheme to increase Australian sulphur supplies by pyrites treatment. Immediate supplies should see Australia through

until next year, but increased local production would be necessary hereafter and a scheme would be worked in conjunction with mining operations. If necessary, the Government would meet a cost of some millions. Portuguese six months exports of pyrites were 280,939 tonnes (213,823 first half of 1950).

Titanium.—The Titanium Metals Corporation of America (National Lead-Allegany Ludlum Steel) have obtained leases of the Basic Magnesium plant built by the U.S. Government during the World War at Henderson, Nevada. The terms of the contract call for an initial output of 3,600 s.tons of metal annually, which should be reached towards the end of 1952. Titanium Metals is at present producing sponge titanium for National Lead plants at Niagara Falls and Boulder City. The current price of \$6 a lb. for forgings, bar and rod, and of \$15 for sheet are expected to decline as new plants with large outputs in the U.S. and Canada get into their stride.

Tungsten.—The tungsten Control recently established in this country is still somewhat confusing in detail, but the general position as we understand it is: All material will be sold by the Ministry of Materials. The Corporation is, of course, under the control of the Ministry, but otherwise is a separate entity being the Ministry's instrument merely for purchase of tungstiferous material. The Ministry has indicated that for the present they will dispose of standard class concentrates at 535s. per unit d.d. The Corporation's buying price here is 525s., subject to revision at any time. At this figure, fairish business is reported to have been done this week. Mining for tungsten ores is reported to have become more active in Western Australia, but any large increases on the exiguous production (7½ tons in 1948) is unlikely owing to the shortage of mine labour.

Gold.—Transvaal output in July was 978,402 f.oz., compared with 993,672 f.oz. in July, 1950, thus output continues to run rather below last year's figures.

The West Australian output in June was 44,425 f.oz., which is in line with figures earlier this year, with the exception of the big output reported in May of 78,612 f.oz.

Colombian output in April rose to 43,218 f.oz. making a four-monthly total of 144,852 f.oz. against 139,236 f.oz. a year earlier.

Platinum.—Value of the platinum exports from the Union of South Africa in the first five months of the year is reported at £1,170,486 compared with £678,220 in the first five months of 1950.

The London Metal Market

(From Our Metal Exchange Correspondent)

The tin market remained steady on Friday last, but in the late dealings on Monday prices advanced sharply on reports of an agreement between the Bolivian producers and the R.F.C. on a price of 112c. and that a contract at this figure possibly for one year was likely. This was followed by news that the Bolivians would accept but only for one month's supply, and that negotiations should continue as to the future. On Tuesday it was reported and later denied that the offer of 112c. had been rejected by the Bolivians. It is understood that there will be another meeting early next week. In view of the uncertainty as to the outcome of these discussions the market here has receded to about last week's levels. It has been rumoured that America has already re-entered the open market, but

we are unable to find any indication that this is a fact. Stocks of tin in official warehouses for the week ended 11th inst. at 1,466 show a decline of 241 tons. Enquiry from the Continent has been quiet and only a small business has been done during the past week.

In regard to other metals, copper is still very firm in the official market and extremely so in the free market. Lead and zinc are also firm but in the free market the tendency is somewhat weaker mainly owing to the lack of available currency.

On Thursday the official close on the tin market was:— Settlement price £840, Cash Buyers, £840, Sellers £842 10s.; Three months' Buyers £816, Sellers £817 10s. In the afternoon the market was firmer. Turnover for the day was 60 tons. Approximate turnover for the week was 315 tons.

The Eastern price on Thursday morning was equivalent to £834 17s. 6d. per ton, c.i.f. Europe.

Iron and Steel

Readers of the *Mining Journal* would not be amongst those who were surprised by the very steep rise in steel prices which were imposed without notice by the Minister of Supply on Monday last. To those who have watched the rapid ascent in the cost of all imported materials, rail and sea transport, fuel and wages, it has long been apparent that a substantial advance in steel prices was unavoidable. Decisive action by Mr. Strauss to bring selling prices into closer relationship with the actual cost of production has in fact been too long delayed. His reluctance to give a further impetus to the surging tide of inflation is intelligible, in view of the wide effect of the increases, amounting in some instances to as much as 25 per cent. However, the nation's finances are in no condition to continue to absorb the heavy losses which have been incurred during the past few months.

In April last the rise in railway rates added £6,000,000 to the cost of steel production; fuel costs have continued to rise, and it is revealed by the British Iron & Steel Federation that between June, 1950 and June, 1951 the freight rate on Mediterranean ores advanced by 190 per cent. Upon the Exchequer the heaviest burden was imposed by the subsidy on imported iron and steel. Heretofore the Government has borne the whole of the trading loss involved in importing high cost steel and selling it to home users at the fixed home price. The Government has now decided—and rightly so—that this trading loss, but not the import duty, must be recovered by an adjustment spread over home controlled prices.

In the case of foundry pig iron the increase amounts to no more than 11s. 6d. per ton, basic iron is advanced by 16s. 6d., soft billets by £4 7s. 6d., joists £3 10s. 6d. and uncoated sheets £6 2s. 6d. per ton. These are much the biggest increases imposed during the twenty years of steel price control and the repercussions are bound to be severe. It is estimated that it will add £11,000,000 to this year's arms bill, £4,000,000 to the outlay of the nationalised railways and mines, and will seriously increase the costs of the shipbuilding, engineering and motor industries, which will have to be passed on to the buyers.

Exporters who have to meet world competition will undoubtedly find their difficulties increased. It is, however, re-assuring to observe that after allowance has been made for this week's advances the index figure for British steel will be 130 per cent. above 1938 levels compared with a rise of 250 per cent. for all other articles. Moreover, they will be fully competitive with steel prices

in Western Europe and far below those in U.S.A. In a few cases slightly lower prices are quoted in Germany but the Federation states that German prices are expected to be raised £4 10s. per ton "almost immediately."

Coal

The Ministry of Fuel and Power reports the output of coal for the week ended August 11 as 2,600,000 tons, as compared with 2,884,800 tons in the previous week. Distributed stocks for the week ended August 4 were 13,876,000 (13,765,000). The number of men on colliery books for the week ended August 4 was 700,100 (700,400).

Figures of production for both weeks were down over the preceding weeks owing to the August holiday.

AUGUST 16 PRICES

COPPER

Electrolytic...	£234	0	0	d/d
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TIN

(See Metal Notes above for Thursday's Metal Exchange prices)

LEAD

Soft foreign, duty paid	£180	0	0	d/d
Soft empire, including secondary lead	£180	0	0	d/d
English lead	£181	10	0	d/d

ZINC

G.O.B. spelter, foreign, duty paid	£190	0	0	d/d
G.O.B. spelter, domestic	£190	0	0	d/d
Electrolytic and refined zinc	£194	0	0	d/d

ANTIMONY

English (99%) delivered,					
10 cwt. and over	£390	per ton		
Crude (70 %)	£305	per ton		

NICKEL

99.5% (home trade)...	£454	per ton		
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OTHER METALS

Aluminium, £124 per ton.	Platinum (scrap), £27.
Bismuth, 25s. 9d. lb.	Platinum, £27 £33 5s. nom.
Cadmium, 18s. 9d. lb.	Rhodium, £45 oz.
Chromium, 5s. 11d. lb.	Ruthenium, £30 oz.
Cobalt, 17s. 6d. lb.	Quicksilver, £73 10s./£74 ex-warehouse.
Gold, 248s. f.o.z.	Selenium, 25s. nom. per lb.
Iridium, £65 oz. nom.	Silver (bar), 78 <i>1</i> / ₂ d. f.o.z. spot and forward.
Magnesium, 1s. 6d. - 2s. lb. according to quantity.	Tellurium, 19s. lb.
Osmiridium, £35 oz. nom.	
Osmium, £70 oz. nom.	
Palladium, £8 10s. oz.	

ORES, ALLOYS, ETC.

Bismuth	50%	15s. lb. c.i.f.
		40%	14s. lb. c.i.f.
Chrome Ore—			
Rhodesian Metallurgical (lumpy)	£13	per ton	c.i.f.
" " (concentrates)	£13	per ton	c.i.f.
" " Refractory	£12	12s. per ton	c.i.f.
Baluchistan Metallurgical	£13	18s. 6d. per ton	c.i.f.
Magnesite, ground calcined...	£26	- £27	d/d
Magnesite, Raw	£10	- £11	d/d
Manganese, Best Indian	(Nominal)	
Molybdenite (85% basis)	103s.	6d. per unit	c.i.f.
Wolfram (65%), U.K.	525s.	nom. c.i.f.	
Tungsten Metal Powder (for steel manufacture)	35s.	nom. per lb. (home)	
Ferro-tungsten	33s.	nom. per lb. (home)	
Carbide, 4-cwt. lots	£30	3s. 9d. d/d per ton	
Ferro-manganese, home	£39	4s. 4d. per ton	
Ferro-manganese, export	Nom.		
Brass Wire	2s.	7 <i>1</i> / ₂ d. per lb. basis.	
Brass Tubes, solid drawn	2s.	1 <i>1</i> / ₂ d. per lb. basis.	

The Mining Markets

Stock markets last week were generally firm, but business was on a reduced scale.

Highlight of the week's markets was the continued upward trend of leading industrials, an improvement which has brought the *Financial Times* index of ordinary shares to a point just above what it was, prior to Mr. Gaitskell's dividend freeze.

Kaffirs were idle, business in many shares being hardly sufficient to test quotations. Yet little impression was made by the South African Minister of Defence's statement about placing the Rand mines "under the control of the people." In fact, Luijpaards Vlei, Spaarwater and Vogels, all hardened slightly. Developers were also dull. Wit Extensions put on 6d. to 8s. 3d., on rumours that Jeannette may soon be floated to work the ground east of Loraine Gold, but reacted later to 8s. The L.R.6 borehole results failed to move Harmony or Middle Wits. The L.R.6 borehole is situated on farm La Riviera 289 and intersected the basal reef at 5,867 ft., assaying 36 dwt. over a corrected width of 6.6 in., equivalent to 238 in.-dwt. This result does not compare with the disclosures obtained from the L.R.7 borehole on the same farm, reported last week, which assayed 98.8 dwt. over 21.8 in., equivalent to 2,514 in.-dwt.

The West African market, long in the doldrums, showed signs of stirring. Attractive yields are to be had in this section, and hopes that exceptional treatment under dividend control might be given, brought in buyers.

Lead-zinc shares were a cheerful market. Zinc Corporation and New Broken Hill rallied on the news that the miners had returned to work, the former ending the week 1s. 3d. higher and the latter was up 1s. The feature in this section was the announcement of the details of the Mount Isa-Mining Trust deal.

PRICE AUG. 15	+ or on week	O.F.S.	PRICE AUG. 15	+ or on week	O.F.S.
African & European.....	3s	Anglo F.S.A.....	13/3	-4d	G.F. Rhodesian.....
Anglo American Corps.....	7s	Blinkpoort.....	23/9	-4d	London & Rhodesian.....
Anglo-French.....	21/10	Central Mining F.S.....	4/10	-1d	Metopa.....
Anglo Transvaal Consol.....	40/-	Fredries.....	12/4	+1d	Mysore.....
Camp Bird.....	12/9	Fredries N.....	11/9	-	New Guinea.....
Centrifugal.....	4/1	Geoffries.....	11/10	-	North Africa.....
Consolidated Goldfields.....	2s	F.S. Geduld.....	3s	-	Oregone.....
Consol. Mines Selection.....	33/1	Geoffries.....	27/6	-	Oroville.....
East Rand Consols.....	4/6	Harmony.....	25/6	-	St. John d'Ei Rey.....
General Mining.....	5s	Lvdenburg Estates.....	11/10	-	Zams.....
H.E. Prop.....	38/1	Middle Wits.....	24/6	-	
Henry S. Transvaal.....	7s	President Brand.....	22/9	-	
Johnnies.....	3s	President Steyn.....	19/-	-	
Rand Mines.....	6s	St. Helena.....	30/7	-	
Rand Selection.....	41/10	U.F.S.C. & G.....	9/9	-	
Union Corporation.....	10s	Virginia Deb.....	73	-	
Vereniging Estates.....	6	Witbank.....	14/3	+3d	
Writs.....	33/1	Western Holdings.....	38/9	-	
West Wits.....	2s				

RAN GOLD	Price Aug. 15	+ or - on week	O.F.S.	Price Aug. 15	+ or - on week	O.F.S.
Blyvoors.....	48/6	-	Amalgamated Banket.....	2/1	-	
Brakpan.....	19/3	-	Ariston.....	7/1	-	
City Deep.....	3s	-	Ashanti.....	27/6	-	
Contra. Main Street.....	6s	-	Biblam.....	9/7	-	
Crown.....	4s	-	Bremang.....	3/1	-	
Daggas.....	3s	-	Great Reef.....	1/4	-	
Dominion Reefs.....	1/9	-	G.C. Selection Trust.....	8/10	-	
Doorfontein.....	29/9	+1/-	Konongo.....	1/10	-	
Durban Deep.....	3s	-	Roan Antelope.....	22	-	
E. Dagga.....	24/4	-	Roan Selection Trust.....	17/10	-	
E. Geduld (4/- units).....	4s	-	Tanks.....	10/4	+1d	
E. Rand Props.....	4s	-	Tharsis Sulphur Br.....	51/3	-	
Geduld.....	7s	-				
Grootvlei.....	38/9	-				
Libanon.....	17/3	-				
Lindley Vlei.....	18	-				
Manevale.....	21/3	-				
Modderfontein B.....	5/6	-				
Modderfontein East.....	2s	-				
New Kleinfontein.....	32/6	-				
New Pioneer.....	24/4	-				
Randfontein.....	18/3	-				
Rietfontein Deep.....	14/3	-				
Rose Deep.....	36/10	-				
Simmer & Jack.....	6/6	-				
Springs.....	9/10	-				
Sub Nigal.....	3s	-				
Van Dyk.....	1s	-				
Venterspoort.....	30/-	-				
Vlakfontein.....	19/-	-				
Vogelstruisfonte.....	27/9	+1/-	Cam and Motor.....	33/1	-	
West Driefontein.....	6s	-	Champion Reef.....	10/9	-	
W. Rand Consolidated.....	41/10	-	Falcon Mines.....	10/9	-	
Western Reefs.....	41/10	-	Globe & Phoenix.....	23/-	-	

Mount Isa is seeking to acquire the Mining Trust's share capital on the basis of £1 of ordinary stock of Mount Isa for every seven shares in the Mining Trust. If shareholders of the Mining Trust accept they will receive about 7s. 5d. in cash or kind for each of their shares and in addition, the Mining Trust will distribute to its shareholders 1s. per share in cash as a return on capital and therefore free of income tax. A further inducement to Mining Trust shareholders to accept is that Mount Isa is registered in Queensland and therefore not subject to the dividend freeze. Under Gaitskell's "mean" the Mining Trust's distribution would be limited to 9 1/6 per cent while Mount Isa's directors estimate that net profits for the year ended June, 1951, will be in excess of the 1949 figure when 25 per cent was paid. The offer is conditional, but Mount Isa may waive any of the conditions, including Treasury consent being granted to the transfer of Mining Trust's residence to Australia. Mount Isa responded favourably to the news, putting on 3d. to 47s. 3d., while Mining Trust were firm at 7s. 3d.

Eastern Tins went better immediately following the announcement that the Malayan profits "freeze" was off, but this movement was not carried through. In other tins Geevor stiffened slightly, and Southern Tronoh reached 25s., investors being attracted by the company's high dividend standard. Siamese Tin and Bangrin Tin, which in mid-week had been a difficult market, on mixed hopes and fears that their cash resources would be expended in developing the lead-zinc mines in Scotland they are currently investigating, were better later. Consolidated Murchison continued to be a lively market, but despite the excellent quarterly profit figures, it reacted 5/32nds to 5/27/32nds after the announcement.

Dollar stocks were firm but changes were few. International Nickel was again prominent on the half-yearly earning figures which showed an increase in net profit of £9,000,000 to £29,400,000.

MISCELLANEOUS GOLD

PRICE AUG. 15	+ or - on week	O.F.S.
G.F. Rhodesian.....	8s 4d	
London & Rhodesian.....	5s	
Metopa.....	2/6	
Mysore.....	6/3	
New Guinea.....	11/0	
North Africa.....	14/1	
Oregone.....	2/4	
Oroville.....	11/9	
St. John d'Ei Rey.....	38/9	
Zams.....	33/9	

DIAMONDS

PRICE AUG. 15	+ or - on week	O.F.S.
Anglo American Inv.	4s	
Casts.....	37/3	+1/9
Cons. Diam. of S.W.A.	32	+ 1/3
De Beers Dfd. Bearer.....	65/6	+3/9
De Beers Pfd. Bearer.....	16/3	+ 1/3

COPPER

PRICE AUG. 15	+ or - on week	O.F.S.
Chartered.....	70/3	-
Indian Copper.....	4/3	-
Messina.....	5s	-
Nchanga.....	5s	-
Rhod. Anglo-American.....	7/1	-
Sierra Leone Selection.....	1/4	-
Khokana.....	22	-
Rio Tinto.....	20/3	-
Roan Antelope.....	10/4	+1d
Roan Selection Trust.....	48/6	+1/9
Tanks.....	51/3	-
Tharsis Sulphur Br.....	13/3	-

TIN (EASTA)

PRICE AUG. 15	+ or - on week	O.F.S.
Anglo-Burma.....	2/9	-
Ayer Hitam.....	28/6	-
Bangrin.....	28/6	-
Bengkong.....	10/3	+1/3
Hoong Kong.....	28/4	-
Kamunting.....	12/3	-
Kepone Dredging.....	12/6	-
Kinta Tin Mines.....	15/3	-
Kramat Metal.....	13/3	-
Kutai Dredging.....	12/6	-
Pahang.....	14/3	-
Penakalen.....	12/9	+1d
Petaling.....	17/9	-
Rambutan.....	10/4	-
Siamese Tin.....	10/7	-
S. Malaya Kinta.....	29/6	-
S. Tronoh.....	24/6	+4d
Sungei Kinta.....	18/9	-
Tekka Taiping.....	9/3	+6d
Tronoh.....	28/6	+6d

MISCELLANEOUS BASE METALS & COAL

PRICE AUG. 15	+ or - on week	O.F.S.
Amal. Collieries of S.A.	61/3	-
Anglo-Bolema.....	71/3	-
China Engineering.....	2/9	-
C.P. Manganese.....	49/4	-
Natal Navigation.....	5s	-
Wankie.....	22/9	+1/3
Withbank Colliery.....	4	-

CANADIAN MINES

PRICE AUG. 15	+ or - on week	O.F.S.
Dome.....	\$29	-
Hudson Bay Min.	111/5	-
Imperial Nickel.....	\$79	-
Minin Corp. of Canada.....	6s	-
Noranda.....	\$145/5	-
Quemont.....	\$51	-

OL

PRICE AUG. 15	+ or - on week	O.F.S.
Anglo-Iranian.....	5s	+ 1/2
Apex.....	48/9	-
Attock.....	23/9	+7/4
Burmah.....	65/3	+3/1
Canadian Eastern Eagle Bearer.....	37/1	+1/9
Exxon.....	10/4	-
Mexican Eagle.....	26/6	+6d
Shell.....	4/8	+ 1/2
Tridom Leasehold.....	30/6	+1/9
T.P.D.	41/3	+1/10
Ultramar.....	32/-	+2/7

Miscellaneous Mining Progress Reports

The June quarterly statements and mining reports of Rhodesian, West African and Australian companies made a generally agreeable showing.

RHODESIAN GOLD

A somewhat lower footage of work was accomplished on Cam & Motor during the June quarter (2,072 ft. compared with 2,572 ft. previously). Development was, as usual on the Cam, Cam Spur and Motor Lodes giving varying results. Values of 13.3 dwt. were encountered in a rise from No. 39 level, Motor Lode. Profit of £69,927 went against £72,771 in March quarter.

The sister undertaking, Sherwood Star, reported a larger profit of £5,245 from a tonnage of 6,700. No development was done.

At the Rezende, 915 ft. of development was accomplished principally in driving and raising on the 15th and 16th levels, with values ranging between 1.3 dwt. and 6.9 dwt. Profit of £4,519 was in advance of that for the previous quarter.

Although Motapa Gold's June quarterly profit of £11,669 was little changed from that of the previous three months, conditions at the mine appear to be easier. There was a further improvement in native labour and consequently more development—5,013 ft. 250 ft. of the 1,630 ft. proved on strike was payable, value 5.8 dwt. (previous quarterly value was 4.3 dwt.).

Phoenix Prince profit for the June quarter of £5,262 went against £11,532 for the first three months of the year. Tonnage crushed was similar, 31,380, as likewise yield of gold, 3,426 ozs. Rather less development was done, 1,513 ft. and the percentage payability was 38.8 compared with 72 previously.

Operations of Thistle Etna for June three months gave a profit of £1,255 against £1,220. Ore milled was 12,400 tons, yielding 1,195 oz. gold and 700 oz. silver.

Although for the first time, the sale of wolfram concentrates from the Sunace mine, belonging to Falcon Mines, added to the combined profits of Sunace and Bay Horse, the total of £8,534 was less and went against £12,257 in the March period. Output at Sunace was adversely affected by temporary closing down of the cyanide section pending completion of construction work. At the Falcon Company's Dalny mine, crushing was stepped up to 9,000 tons and profit to £2,979 against £771. Developments were satisfactory and of the 1,005 ft. sampled, 45 per cent were payable of 5.2 dwt.

WEST AFRICAN

Ashanti Goldfields June quarterly statement mentioned that work had proceeded on the erection of installations and clearing site preparatory to starting sinking the Eaton Turner shaft in the near future. Profit of £264,182 brought the total for the nine months to end-June to £803,787 against £845,180 for the corresponding period of 1950.

Bibiani's estimated profit of £46,875 was much below that of the previous quarter and gave a total for nine months to June 30 of £153,582 against £231,730.

Production report of Ariston Gold for ten months to end-July announced a profit of £446,471 or a decrease of £55,517 over the same period of the previous year. It was due to steadily rising costs.

Development work of Konongo amounted to 1,911 ft.—about the same as in previous quarter and satisfactory runs of ore were opened up on the new Boabedroo ore body. 115 ft. of rising and winzing sampled averaged 45.4 dwt. over 48 in. Company's chairman recently said that the mine's future must depend upon new discoveries.

Total development at Lyndhurst during June three months was 118 ft. but proved to be unpayable. 30 ft. rising above No. 6 level Boabedroo averaged 18.8 dwt. 4,975 tons of company's ore, yielding 3,693 oz. gold were treated at Konongo mill.

A lower footage of development was done by Taquah; most of the 2,033 ft. consisted of driving and of the 990 ft. sampled, 455 ft. were in pay, averaging 6.07 dwt. over 58 in. Of the 520 ft. raising sampled, 69 per cent was payable of 8.91 dwt.

The second quarterly report of Nanwa Gold announced that the plant started running on April 16 and 9,702 tons of ore were crushed during the June quarter, producing 1,421 oz. gold. Acute shortage of labour hampered work in every direction. Various adjustments have been made to the plant which appears virtually trouble-free.

AUSTRALIAN, NEW ZEALAND, ETC.

The breakage of crankshaft on the main winder was partly responsible for the lower production by Sons of Gwalia—the Australian gold producer—during the first four-weekly periods of the current year. A good part of the loss will, it is hoped, be made up for during the remainder of the year.

During the 12 weeks ended June 19, Great Boulder treated 80,845 tons for a recovery of 19,519 oz. gold. Development totalled 2,313 ft.

Mount Lyell—the Australian mixed metal undertaking—produced 2,277 tons copper, 7,232 oz. silver and 1,478 oz. gold.

Owing to rising costs and the small amount of low-grade gravel reserves ahead of Nos. 3 and 6 dredges, the Bulolo Company reports that these have been permanently closed down. The yardage dredged by the fleet on its New Guinea property during the year to May 31, 1951 is given as 12,321,000, producing 68,229 oz. gold. The company reports a satisfactory settlement with the miners in connection with wages and working period.

Zinc Corporation reported that from Jan. 1 to July 27, lead production amounted to 33,470 tons; zinc concentrates 51,038 and silver, 708,625 oz.

For the same period, New Broken Hill produced 9,301 tons lead, 214,294 oz. silver and 26,264 tons zinc concentrates.

During the June quarter, Indian Copper produced 1,826 l. tons refined copper, 1,148 tons of rolled brass, 249 tons yellow metal circles, 534 tons rolled copper and 208 tons copper circles. Satisfactory developments were carried out on two of the company's three properties—Mosaboni and Badia.

A lower output of metals was reported by San Francisco Mines of Mexico during the second quarter of the year; tonnage milled was 138,200 and concentrates produced were: lead 9,363 tons, copper 1,004 tons, zinc 14,910 tons.

Another Mexican mixed-metal producer, Fresnillo, reported that it had milled during the three months to end-June, 184,658 tons producing 10,439 tons lead concentrates, 1,423 tons copper and 12,883 tons zinc.

Messina Transvaal reported that from its property in South Africa during the June quarter, it had recovered 2,692 long tons copper, from 167,900 long tons of ore.

Rooiberg Minerals produced tin concentrates during the second quarter of the year of 209 l. tons. Estimated profit was £107,045 against £113,585 in the March quarter.

Apex Mines reported an output of 274,511 tons of coal from the Greenside colliery and an estimated total profit for the June quarter of £36,703.

Company News & Views

Profits—An Important Function of Saving

It is well that one of the leading economists of the present day, Professor R. G. Hawtrey, was able to present a paper on the much misunderstood subject—"The Nature of Profit"—to the Economics Section, of which he is president, of the British Association at Edinburgh.

Profit, Professor Hawtrey declared, "was the remuneration of selling power" which accrued to the business owner in his capacity as owner of his product. Profit-making had long been under attack, not only from without but also from within the capitalist system and had become, he said, one of the most controversial issues of the world. The advance of democracy had given taxation an equalitarian bias and had meant the building up of taxation systems, the successful continuation of which was thought to rest on the assumption that what was left to the big profit maker would still provide sufficient incentive to him to remain devoted to the development of his business.

On this point, Professor Hawtrey stated that when big incomes were attacked by direct taxation the impairment of incentive was not the primary danger, but rather the dangerous effect upon savings. "Profits are the principal source of saving; not only the re-invested profits of businesses, but the profits and dividends distributed to individuals, for it is the recipient of a relatively large yet fluctuating, and possibly precarious income, who has the strongest motive to save."

These are arguments which the Chancellor and the Opposition would do well to ponder when and if the time comes to debate the White Paper proposals on dividend limitation. The present taxation burden has made ordinary savings virtually impossible, and with the introduction of dividend control, the remaining sources of risk capital will rapidly vanish as the accruing rewards will neither justify the outlay nor encourage the accumulation of funds to invest in business enterprise. If there is no risk capital there will be no new ventures, and without new ventures there can be no progress. In short, as Professor Hawtrey aptly remarked, "Proposals for ridding society of the abuses of profit making should make some alternative provision for the services which the profit-makers render."

Inco's Continued Profit Expansion

During the second quarter of this year, the International Nickel Company of Canada raised its monthly output by 1,000,000 lb. to achieve a record peace-time total of 21,000,000 lb. This production figure was made possible by emergency production facilities installed to help meet the heavy demands resulting from the rearmament programmes which were battened on to an already high level of civilian consumption. More intensive production involved a higher wages bill and wage contracts concluded during the quarter added approximately \$15,000,000 to annual costs. On the other hand, this increase was countered by the raising of its selling prices, in terms of sterling, by just over 10 per cent last May.

Net Sales	Other Income	Costs	Tax	Net Profit	Earnings per share
(All figures in U.S. dollars.)					
<i>Six months ending June 30, 1951:</i>					
131,567,537	829,744	74,456,165	22,059,045	29,385,046	1.94
<i>Six months ending June 30, 1950:</i>					
106,125,254	569,955	69,439,775	11,126,604	20,385,591	1.33

Inco's half yearly statement shows that sales revenue rose proportionately higher than costs and that although the company was called upon to bear an almost doubled taxation burden net earnings increased by approximately

\$U.S.9,000,000 compared with the corresponding period last year.

Earnings per share for the June quarter at 97c. were equal to the earnings in the March quarter so that if these results are maintained during the next six months earnings per share will be close on to \$4 per share, which compares with \$3.21 for 1950.

London Tin's Dividend Income

The full report and accounts of London Tin Corporation for the year to April 30 last disclosed that the sharp increase in total profits from £535,543 to £734,338 was chiefly due to the expansion in dividend income from investments, which mounted from £512,804 to £972,015. Although the increased profits attracted a much higher tax, £470,228 against £243,724, net profit including U.K. income tax recovered, was £581,893 compared with £330,370 in the previous year. Thus, the dividends totalling 18 per cent were provided with ample cover. While this represents a 6 per cent increase on last year's distribution, it is still indicative of a conservative dividend policy. This will bear somewhat hard on shareholders as the permitted ceiling will now be 15 per cent. The consolidated accounts record a further substantial improvement in the company's financial position. Current assets have risen by nearly £1,000,000 to the impressive total of £6,443,524, an increase which principally reflects the sharp advance in cash at call and at bankers to £2,961,356 against £1,832,423. This is in stark contrast to current liabilities which at £862,059 represent only a small increase over the corresponding figure of £613,445 in the previous year.

Under dividend limitation the company's position will be somewhat adversely affected as most tin companies under the new proposals will have to reduce their dividend payments and the Corporation's dividend income might, in consequence, be lowered during the current year. On the other hand, the Bill is not yet law nor has it been decided whether or not such companies will be given some relief for the years in which they could pay very little or nothing.

Geevor's Position Reviewed

Shareholders of Geevor Tin Mines will do well to study what the chairman, Mr. George W. Simms, has to say in his address circulated with the company's report and accounts, for the year to March 31, 1951.

Geevor, he points out is an established mine, the development of which was carried out in times when taxation and costs were far below present day levels, and the time had now come when the company's resources, built up with much difficulty over a long period of years, must be expended on further shaft sinking and on new equipment.

Although the results for the year to March 31, which were given in our issue of August 10 last, were eminently satisfactory, Geevor with its narrow lodes is dependent upon a large development footage being driven each year in relation to the tonnage extracted. Consequently the need for discovering new lodes and extending lateral development as rapidly as possible, Mr. Simms said, is ever pressing.

The impoverishment of the company's No. 3 branch lode was not unexpected, the chairman said, although further development in this section will require driving to the West into the old Levant Undersea sett. This move may prove to be a good one as evidence from the old workings of the Levant Mine is such that mineralization may be expected to persist to greater depths as the company's development extends further to the west. However, since no shaft sinking has been carried out at Geevor since 1944, operations are becoming more and more remote from the Victory shaft. It is therefore essential for the company to conserve its resources and to build them

up to provide for further shaft sinking and to carry out its future development programme. This is in addition to the new mine headgear and winding engine required to replace the existing equipment, which has given excellent service over a long period of years.

Shareholders will note that no less than £64,396 was transferred to general reserve out of last year's earnings, bringing this account up to £114,000. The company has also some £9,000 in mine development reserve, while current assets stand at the satisfactory figure of £446,271, as against current liabilities of £100,887, which amount includes the sum of £18,963 required to meet the final dividend payment of 35 per cent.

Gold Mines of Kalgoorlie's Higher Milling Grade

Mining operations of Gold Mines of Kalgoorlie during the year to March 31, 1951 were maintained at full scale. Although tonnage treated was 98 tons less than in the previous year, the proportion of underground ore treated increased from 65 per cent to 75 per cent, the grade being higher by .16 dwt. at 5.23 dwt. per ton.

Year to Mar. 31	Tons Milled	Yield oz.	Grade dwt.	Costs per ton	Ore * Reserve	Grade dwt.
1951	163,115	42,670	5.23	44.16s.	488,800	5.6
1950	163,213	41,337	5.07	37.82s.	486,150	5.4

* Proved and probable.

Financial results recorded in the profit and loss account were satisfactory. Net receipts from gold sales were £530,491 which compared with £451,260 received last year. However, as can be seen from the table, costs were again higher, due mainly to increased cost of wages and stores, which absorbed a total amount of £360,140 (£308,668) and after this and all other expenses had been provided for working profit amounted to £163,848 against £139,862 previously. Australian taxation took a mere £558. Dividend payments aggregating 20 per cent (22½ per cent) required £122,950, leaving the forward balance higher at £37,979 compared with £4,270 previously.

Development work carried out gave mixed results and of the 9,741 ft. driven, 2,401 ft. were in ore, 2,696 ft. were off-lode and 4,371 in country rock. The explanation for the high proportion of driving off-lode was the development of a large footage of main haulage drives and ore passes to them to connect workings in the Brownhill lease to the Iron Duke shaft.

Rand Mine Returns for July

Reflecting the longer working month, the July returns of the Kaffir producers recorded generally expanded tonnages with a consequent benefit to working costs. Those for June, however, included a retrospective increase in miners' wages. Profits failed to improve on 10 mines, but those of 32 showed increases. The same tonnage as in the previous month was dealt with by 15 producers; that of five was lower and 22 higher. Two announced record throughputs. The unit cost figure in the case of 32 mines was lower; that of seven higher, while three mines worked at the same figure as in June.

All the Central Mining producers, with the exception of New Modder, announced increased profits; those of East Rand Props being £30,700 up and Blyvoor's £18,566. This latter mine established a record in tonnage. Both Crown Mines and City Deep's profits were £10,000 better; those of Durban Deep £13,500 up.

An increase in profits was recorded by all the Anglo American producers. They worked at a lower figure of costs, with the exception of Western Reefs, which were

the same as in the previous month, while the mine's tonnage was a record. The throughput of East "Dagga" and Springs Mines was the same as in June. Daggafontein's profit was £27,547 better.

Every member of the Union Corporation crushed the same tonnage as in the previous month, while two mines—Grootvlei and Marievale—made higher profits and with Geduld and Van Dyk worked at a lower figure of costs; those of East Geduld were the same as in June, but profit was slightly down.

The best showing in the Gold Fields list was made by Simmer & Jack, whose profit rose by £6,600, but Sub Nigel's profit was £2,200 lower, Venterspost £1,200 and "Vogels" about £550 less.

All the "Johnnies" subsidiaries wound up the month with higher profits and recorded lower costs. The Randfontein confirmed stoppages in power supply resulting in the closing of the mill on several occasions, which interruptions had an adverse effect on the month's run, although both tonnage and profits were higher while costs were 7d. per ton down.

West Rand's profit was £12,500 better as the result of higher tonnage and lower costs, but the other member of the General Mining group, South Roodepoort, announced a slightly lower profit.

A good return was made by New Kleinfontein, but that of Wit Nigel was disappointing; the profit of £701 compared with £1,294 in June.

The July returns for the Rand Mine producers as given below:

Blyvoor.—	107,000 tons yield 70,086 oz.; profit £638,164.
Brakpan.—	120,000 tons yielded 22,578 oz.; profit £59,988.
City Deep.—	164,000 tons yielded 33,004 oz.; profit £64,587.
Consol.M.R.—	198,000 tons yielded 26,754 oz.; profit £54,770.
Crown.—	285,000 tons yielded 46,528 oz.; profit £85,447.
Daggafontein.—	239,000 tons yielded 58,511 oz.; profit £440,002.
Durban Roodepoort.—	186,000 tons yielded 31,719 oz.; profit £108,540.
East Champ D'Or.—	33,000 tons yielded £62,078; profit £11,160.
East Dagga.—	100,000 tons yielded 18,324 oz.; profit £79,104.
East Geduld.—	149,000 tons yielded 44,703 oz.; profit £365,814.
E. Rand Prop.—	231,000 tons yielded 47,565 oz.; profit £200,578.
Geduld.—	105,000 tons yielded 15,234 oz.; profit £42,558.
Govt. Areas.—	236,000 tons yielded £410,736; profit £60,253.
Grootvlei.—	197,000 tons yielded 44,231 oz.; profit £298,173.
Libanon.—	87,000 tons yielded 16,094 oz.; profit £46,261.
Luipaards Vlei.—	102,000 tons yielded 18,899 oz.; profit £61,186.
Marievale.—	61,000 tons yielded 15,131 oz.; profit £74,444.
Modder "B".—	56,000 tons yielded 6,279 oz.; profit £10,032.
Modder East.—	121,000 tons yielded 13,972 oz.; profit £37,841.
New Kleinfontein.—	110,000 tons yielded 14,280 oz.; profit £41,008.
New Klerksdorp.—	9,500 tons yielded £13,849 oz.; profit £1,301.
New Modder.—	21,000 tons yielded 2,607 oz.; profit £1,043.
New State.—	62,000 tons yielded £94,727; profit £2,031.
Nigel.—	37,000 tons yielded 4,997 oz.; profit £1,718.
Randfontein.—	354,000 tons yielded £524,517; profit £40,100.
Rand Leases.—	184,000 tons yielded £380,269; profit £88,697.
Rietfontein.—	27,000 tons yielded 6,022 oz.; profit £30,680.
Robinson.—	119,000 tons yielded 18,281 oz.; profit £10,109.
Rose Deep.—	84,000 tons yielded 11,864 oz.; profit £20,326.
Simmer & Jack.—	131,000 tons yielded 20,700 oz.; profit £33,564.
S.A. Lands.—	117,000 tons yielded 20,495 oz.; profit £0,583.
South Roodepoort.—	27,000 tons yielded 5,920 oz.; profit £22,535.
Sparwater.—	10,500 tons yielded 2,350 oz.; profit £29,184.
Springs.—	170,000 tons yielded 21,988 oz.; profit £30,561.
Sub Nigel.—	66,500 tons yielded 23,608 oz.; profit £134,906.
Van Dyk.—	100,000 tons yielded 15,148 oz.; profit £15,241.
Venterspost.—	103,000 tons yielded 21,939 oz.; profit £76,812.
Village M.R.—	34,250 tons yielded £65,828; profit £18,300.
Vlakfontein.—	38,000 tons yielded 14,136 oz.; profit £83,466.
Vogelstruisbult.—	79,000 tons yielded 19,951 oz.; profit £83,299.
Welgedacht.—	32,500 tons yielded 3,924 oz.; profit £3,658.
West Rand Cons.—	221,000 tons yielded 35,479 oz.; profit £173,031.
Western Reefs.—	107,000 tons yielded 23,240 oz. profit £115,584.
Wit. Gold.—	60,000 tons yielded £85,317; profit £2,538.
Wit. Nigel.—	10,000 tons yielded £32,045; profit £701.

Company Shorts

Mount Morgan's Net Profit.—Subject to the completion of the audit, Mount Morgan has announced that the net profit for the year ended June 30, 1951, after providing £87,920 for depreciation (£71,568), and writing off £40,709 expenditure on diamond drilling and sulphur investigations, amounted to £370,707 compared with £391,447 previously.

The North Charterland Exploration Co. (1937).—This company's net profit for the calendar year 1950, as reported in the full accounts now published, was reduced to £7,152 against £15,880 in 1949. The dividend payment of 15 per cent on the issued share capital of £51,131 absorbed £7,670. The forward balance at the year-end was £10,100 compared with £12,880 previously.

Tavoy Tin's Unhappy Position.—The present position in the tin mining district of Lower Burma, where the Tavoy Tin Dredging Corporation carries on its operations, is that Communist gangs remain in charge of the district and mining is impossible. Tavoy Tin's chairman also records in his annual statement that of the two dredges in operation at the beginning of 1950, one was damaged and later sunk by Communists and the remaining dredge's crankshaft broke and before the replacements could arrive, mining in the whole area had been stopped following the murder of the district superintendent, Mr. H. G. End, who was in charge of the company's affairs. A claim on an insurance company for the loss of the dredge has been settled for the sum of £40,000.

During 1950 the output of concentrates amounted to 142 tons. Net profit for 1950 fell to £199 compared with £17,059 in 1949. The carry forward at the year-end was £22,246 compared with £22,047.

It is also recorded that there has been no further move by the Burma Government towards meeting the Corporation's claims for War Damage Compensation.

Mufulira to Exploit Chibuluma Deposits.—The announcement earlier this week that Mufulira Copper Mines had sold one of its Special Grants, the Nkana South Limb, to Chibuluma Mines Ltd., a new company incorporated in Northern Rhodesia, formed to exploit the copper-cobalt ore body at the eastern end of the south limb, confirms previous suggestions that the recent E.C.A. loan of £3,000,000 to Mufulira Copper would be used for this purpose.

The new company will have an authorized share capital of £500,000 all of which is held by Mufulira and board meetings, for the time being, will be held in London.

The copper-cobalt ore body is situated some seven miles to the west of Kitwe in Northern Rhodesia and ore reserves are estimated at 7,300,000 s.tons averaging 5.23 per cent copper and 0.25 per cent cobalt. Production is expected to commence in 1956 and when the mine is in full production, some 16,000 t.tons of copper and 500,000 lb. of cobalt will be produced annually.

The cost of equipping and developing the property is estimated to cost about £3,500,000 of which £3,000,000 will be provided by the E.C.A. under an agreement providing for repayment in copper and cobalt.

The first directors of Chibuluma Mines are as follows:—Mr. R. L. Prain, Chairman and Managing Director; Mr. R. M. Paterson, Technical Director; Mr. A. Chester Beatty, Jr.; Lord Bessborough; Sir Dougal Malcolm; Mr. Thomas G. Moore; Mr. John Payne, Jr.; Mr. K. Richardson; Mr. L. Tucker; Mr. A. C. Wilson; Mr. A. W. Goodbody (Secretary).

Naraguta Tin Investigates Its Property.—The fall in tin ore production by nearly 60 tons to 234 tons of Naraguta Tin Mines for the calendar year 1950 was primarily due to the lesser production from the Korot Areas where certain sections of the ground worked gave disappointing low recovery values, said the chairman, Mr. Herbert T. Skipp, in his annual statement. Much of the chairman's statement is concerned with the low recovery values from this section, in which prior prospecting had given the company grounds to expect higher values. The general manager advised that these low values were due to the abnormal irregularity in the distribution of the ore content, and he further assumed that the ground contiguous to the sections worked might also show a similar disparity between prospecting and recovery values. Under the circumstances ore reserves have been re-estimated, and at the year-end were calculated to be 1,277 tons compared with the previous estimate of 1,290 tons, but as the Korot Areas call for further investigation the estimate of reserves must be subject to contingent revision in the light of the investigations carried out.

The financial results for the year were given in our issue of August 10.

AMALGAMATED ANTHRACITE COLLIERIES

The Twenty-Seventh Annual General Meeting of Amalgamated Anthracite Collieries Ltd. was held on August 15 in London, Mr. John Waddell (the chairman) presiding.

The following are extracts from his circulated statement:—

Since last year there appears to have been practically no change with regard to clearing up the position of the collieries which vested at January 1, 1947—now nearly five years ago. A great deal has happened, however, during the year arising from the setting up of a body in South Wales to try and speed up the division of the modest global sum allocated to that district. Without some speeding up it may well be another five, or even more years before we shall know where we are.

I want you to know what a good asset you have in The British Anthracite Co. Ltd. For last year the net trading profit represents 5½ per cent on the entire £4,186,770 capital of Amalgamated Anthracite Collieries Ltd. From all indications it seems apparent, at no distant date, that this trading group will be earning a profit, before taxation, of as much as 10 per cent on the Parent Co.'s share capital. I do not wish to minimize—when this position arises—what a beneficial effect it will have on the value of members' holdings.

Although we shall undoubtedly have a substantial shortfall on the book value of colliery properties, I should also point out that the breakup value—let alone the real value when including goodwill—of the British Anthracite Group is very much in excess of its book value.

I feel you would like to hear some of the details of the major affairs of the trading group in order that you will appreciate the widespread nature of these activities which is the greatest security for stable results in the future. Dealing with the past, we have received the sum of £180,000 as compensation for completely closing down our business as colliery sales agents. Dealing with the future, we have been steadily consolidating and bringing up to the maximum pitch of efficiency our other retail and wholesale coal distributing businesses. We have expanded substantially our number of registrations which now reach nearly 300,000, and these companies with the increased efficiency and higher turnover are showing steady and improving results.

The Concordia Co.'s results for 1950 were substantially better than for the previous year and those for 1951 are showing a further good improvement. Through the Anglo-French Trust we had a holding which we took the opportunity to extend towards the end of 1950 in Copigraph Ltd. That company, manufacturing carbon paper, etc., at the Treforest Trading Estate near Cardiff, has been able to double its factory and has greatly expanded its output and profits during 1951. The other activities of Anglo-French Trust are also developing very much in accordance with, or even rather better than, our original estimates and will be exceedingly valuable contributors to 1951 profits. Some of our older activities in wagon repairing and brick manufacturing are proceeding steadily. During the year we brought into operation a new brickworks at Cyngorhdy in South Wales and a new kiln at our Lincoln brickworks. Generally our brickwork position is now on a very sound manufacturing basis with an excellent sales outlook for some years to come.

We were able to acquire a half interest in United Kingdom Chemicals Ltd., and United Carbon Black Ltd., who are directing and operating a new factory for making carbon black at Port Talbot, Swansea. This project is of a very substantial nature and will ultimately involve an investment between £300,000 and £400,000, representing our half share. The factory, which had been in development operation on a small scale for some time, settled down to a proper commercial production basis early in 1951 and is now beginning to produce steadily.

In The British Anthracite Group you have a very valuable asset. The company is stronger than ever and on a much better foundation. We are no longer dependent on any one particular line of trade, but have a business widely based on our traditional knowledge of coal and transport, on certain of our old original manufacturing activities which have been modernized and expanded, on a compact field of sound industrial units and now with a substantial stake in a basic branch of the chemical engineering industry which is also a substantial dollar saver.

I would rather not make any prognostications about dividends but I feel I must deal with the situation as I see it. Without making any firm, or even rash, promises, the following facts I think I am justified in bringing to your notice. The Funding Certificates are getting nearer and nearer to complete redemption and, when available, the amount devoted to this purpose would immediately be beneficial; added to this the general outlook of the company should have a very material effect on the prospects of both Preference and Ordinary stockholders. I do not think it wise to do more than pay the interest on the Funding Certificates and their redemption together with the fixed dividend on the Cumulative Preference Stock.

The report was adopted.

August 17, 1951

NCHANGA CONSOLIDATED COPPER MINES LTD.

The Annual General Meeting of Nchanga Consolidated Mines Ltd. was held on August 8, 1951, at Kitwe, Northern Rhodesia. **Mr. H. F. Oppenheimer**, a Director of the Company, presiding.

The statement by the Chairman was circulated with the Directors Report and Accounts for the year ended March 31, 1951, and published in the Press.

At the Meeting Mr. H. F. Oppenheimer, added the following supplementary remarks:

This is the first Annual General Meeting which has been held since the removal of control of your Company to Northern Rhodesia. In the statement by the Chairman which accompanied the Annual Report and Accounts, reasons were given for this change. I would like to add to what was said then about the transfer of control to Northern Rhodesia of this and other important Companies operating in this territory that in our opinion the change is of importance in a wider sense than merely facilitating the administration of the Company or in the lightening of its tax burden.

Rhodesia has advanced a very long way both economically and in national consciousness since these Companies were incorporated and we believe that the time is passing if it has not already passed when the major industries can properly be controlled from outside the country and we hope and believe on the analogy of what has happened in the Union of South Africa and elsewhere that an increasing part of the Share Capital of these Mining Companies will come to be held in Rhodesia itself so that the Mining Industry which is already the mainstay of the economy of this territory will become in every respect a national industry.

It seems to us to be of special importance in view of the proposals that have been put forward for closer association between Northern and Southern Rhodesia and Nyasaland. It would obviously be out of place for me to express any opinion on the particular proposals which have been made but I think I can say that any scheme for closer association generally accepted in the territories concerned will be welcomed by and will receive the full support of the mining industry.

The Report and Accounts were adopted.

The payment of the dividend was approved and the retiring Directors were re-elected. In addition, Mr. H. Kissik was appointed a Director of the Company.

THE RHODESIA BROKEN HILL DEVELOPMENT CO. LTD.

The Annual General Meeting of the Rhodesia Broken Hill Development Company, Limited, was held on August 8th, 1951, at Kitwe, Northern Rhodesia. **Mr. H. F. Oppenheimer**, a Director of the Company, presiding.

The statement by the Chairman was circulated with the Director's Report and Accounts for the year ended December 31st, 1950 and published in the Press.

At the meeting Mr. H. F. Oppenheimer added the following supplementary remarks:

This is the first Annual General Meeting which has been held since the removal of control of your Company to Northern Rhodesia. In the statement by the Chairman which accompanied the Annual Report and Accounts reasons were given for this change. I would like to add to what was said then about the transfer of control to Northern Rhodesia of this and other important Companies operating in this territory that in our opinion the change is of importance in a wider sense than merely facilitating the administration of the Company or in the lightening of its tax burden. Rhodesia has advanced a very long way both economically and in national consciousness since these Companies were incorporated and we believe that the time is passing if it has not already passed when the major industries can properly be controlled from outside the country and we hope and believe on the analogy of what has happened in the Union of South Africa and elsewhere that an increasing part of the Share Capital of these Mining Companies will come to be held in Rhodesia itself so that the Mining Industry which is already the mainstay of the economy of this territory will become in every respect a national industry. It seems to us to be of special importance in view of the proposals that have been put forward for closer association between Northern and Southern Rhodesia and Nyasaland. It would obviously be out of place for me to express any opinion on the particular proposals which have been made but I think I can say that any scheme for closer association generally accepted in the territories concerned will be welcomed by and will receive the full support of the mining industry."

The report and accounts were adopted. The payment of the dividend was approved and the retiring Directors were re-elected.

HENDERSON'S TRANSVAAL ESTATES

The Thirty-Ninth Annual General Meeting of Henderson's Transvaal Estates, Limited, was held on August 9, in London.

Sir Joseph Ball, K.B.E. (Chairman and Managing Director) presided, and, in the course of his speech, said:

The consolidated balance-sheet once again discloses a very strong position. As regards the company's own balance-sheet, revenue from dividends is increased by £16,549, mainly due to the increased dividend on our substantial investment in White's S.A. Cement Company, Limited, while the profit on stock and share transactions, at £18,603, is £13,067 higher than that for the previous year, and the total revenue in London, at £119,077, shows an increase of £29,676 as compared with that for the preceding 12 months. The profit on investment transactions is the highest since 1920, and is approximately four times the average for the past ten years.

We recommend the payment of a dividend of 15 per cent., which is at the same rate as for the four preceding years.

White's S.A. Portland Cement Company, Limited.—The net profit for the year, after allowing for taxation, amounted to £214,857, as compared with £73,337 during the previous year. It is very gratifying that, with the new plant at Lichtenburg operating at full capacity for a part of the year only, and after the creation of substantial reserves, a 7½ per cent. dividend should have been available.

Vryheid.—I mentioned last year that the results of a geological survey carried out on this property were sufficiently encouraging to warrant further investigation by a programme of diamond drilling, in order to test places where the survey indicated the existence of ore bodies. This drilling programme has now been carried out, and has shown that a programme of underground development is warranted.

Coal Interests.—One of the company's main assets is its large interest in the South African coal trade, through its subsidiary, Tweefontein United Collieries Limited.

The export trade for the year 1950 showed a substantial improvement, which, unfortunately, has not been maintained, the tonnage shipped by the associated collieries through Lourenco Marques during the first four months of the current year having shown a considerable falling off, due entirely to the lack of railway transport and shipping facilities.

Increasing rates of South African taxation are causing some concern, as also is the substantial rise in production costs. A much more serious handicap is the continuing failure of the South African Railways to provide adequate transport facilities for coal, whether for export or for inland consumption. It has been authoritatively calculated that, owing entirely to the shortage of railway transport, Transvaal collieries to-day are operating at no more than 70 per cent. of their capacity.

The report and accounts were adopted.

CONSOLIDATED MURCHISON (TRANSVAAL) GOLDFIELDS AND DEVELOPMENT, COMPANY LIMITED.

(Incorporated in the Union of South Africa)
The following is the report on the work done during the quarter ended June 30, 1951:—

Tons Crushed	40,987
Estimated Profit from Antimony and Gold	£698,425
Estimated Taxation	£192,000

In addition Revenue of £1,234 18s. 9d. was received during the quarter in respect of increased revenue from the sales of gold at higher than standard prices.

The Capital Expenditure during the period amounted to £26,320 19s. 2d.

During the quarter the Development footage accomplished amounted to 3,436 feet, of which 1,109 feet were in the ore body. The sampling of 552 feet in the ore body gave the following results:—

Payable on account of the combined gold and antimony content 472 feet. Unpayable 80 feet.

In determining the payable footage the prices of Gold and Antimony as at June 30, 1951, have been used.

The development figures mentioned above are the actual result of the sampling of development work in the ore body; no allowance has been made for modification which may be necessary when computing the ore reserves.

By Order of the Board,
ANGLO - TRANSVAAL CONSOLIDATED INVESTMENT COMPANY, LIMITED.

Secretaries,
Johannesburg.

Topical News in Brief

Australia Buys American Tractors.—Mr. Menzies, the Australian Prime Minister, has announced that the Australian Government is sponsoring orders, under defence priorities, for the purchase of 100 heavy caterpillar tractors from the U.S.A. for opencast coal mining.

Norwegian Iron Ore Mines Progress.—Reconstruction work in the big iron ore mines in Varanger, Northern Norway, which were destroyed during the war, has made considerable progress, and production is expected to be resumed early next year, with initial exports placed at 500,000 tons of iron ore for 1952.

Sulzer-engined Diesel Locomotives in North Africa.—It is reported that 17 new Sulzer-engined Diesel locomotives of 610 h.p. are now hauling mineral trains of 1,500 tons from the mining and phosphate areas near Gafsa and Tozeur to the Mediterranean port of Sfax. The Sulzer-engined Diesel locomotives have eliminated steam locomotives in Southern Tunisia.

Tanganyika Coal Discovery.—Coal has been found for the third time in South West Tanganyika, it is announced by Colonial Development Corporation officials. The Corporation had previously announced the discovery of at least 12,000,000 tons of extractable coal in other areas of a kind "good for Africa" and the present find is described as of even better quality.

Hydro-Electric Development in Indonesia.—The Indonesian Government has earmarked 500,000 rupiahs from the 1951 Budget for drilling and geological research in the area between Tjililin and Radjamandala, where the large Tjitarum dam is to be built as part of a ten-year development plan estimated to cost 2,000,000,000 rupiahs, according to Mr. Sudiatmo, head of the State Hydro-Electric Engineering Section.

Turkey to Encourage Foreign Investment.—To encourage foreign investment in the country, the Turkish National Assembly has passed a bill which gives special privileges for foreign capital invested in the fields of mining, hydroelectricity, industry and other sectors of the economy contributing to the well-being of the country, says Reuter.

Under the bill, foreign investors are guaranteed in advance the right to take out of Turkey (in the original currency of investment) annual profits, dividends and interest; also the original invested capital and/or "wound up" assets of foreign-financed enterprises.

The new provisions are applicable to foreign capital invested in the construction of new plants as well as for the enlarging or re-activating of existing installations, providing they do not constitute enterprises of a monopolistic character.

The term "investment" is reported to be defined as covering (1) capital brought into Turkey in the form of foreign exchange; (2) the value of installations, machinery, tools and instruments, spare parts and accessories, special construction materials, and (3) the value of trade marks, patents, and other protected processes.

Danish Miners for Britain?—A Reuter's report from Copenhagen states that a proposal that 10,000 Danes should work in British collieries has aroused the interest of representatives of the British coal industry, according to Mr. Thaulow, chairman of the Danish Merchant Guild. In an interview with the Danish newspaper *Information*, Mr. Thaulow, who made the proposal during negotiations, said that 10,000 miners would be enough to dig Britain's annual coal supplies to Denmark. He did not mean that the Danes could mine their own supplies but it would have a psychological effect if Danish workers voluntarily took work in British mines. It would emphasize how badly Denmark needed British coal.

While not wishing to dampen Mr. Thaulow's enthusiasm in any way, his proposal falls somewhat strangely on the ears of those of us living in the U.K. For despite the fact that the shortage of manpower in Britain's coal industry is acute all attempts to bolster up the dwindling labour force by recruiting miners from abroad have never met with qualified approval from the miners. Only last week miners at 87 pits in the N.C.B.'s North Eastern Division refused to accept Italians who had already been trained for the work. Further, of 67 pits in which there were vacancies for "green" labour only 18 pits were prepared to countenance the influx of "green" Italian labour.

We have no doubt that the proposal interested "representatives of the British coal industry" but in this case it is necessary to be quite sure that the said representatives are those that matter.

Expansion of Yugoslavia's Machinery Industry.—The machinery industry in Bosnia-Herzegovina, Yugoslavia, is to be expanded by the allocation this year of 500,000,000 dinars. The production programme for the industry ranges from mine machinery, and conveying plant to lorries and tractors, while special attention is to be given to equipment contributing to the opening up of the province's rich coal and ore deposits. Additionally, Reuter reports that at Zenica, which is the centre of Bosnia-Herzegovina's heavy industry, two coking batteries have been erected for the coking of Yugoslav lignite. The four batteries planned are estimated to produce 400,000 tons of coke annually.

WEST AFRICA.—QUALIFIED MINING ENGINEER as assistant on chrome property. Underground experience necessary. Write age, experience, qualifications, salary and salary. Box 376, c/o Dawson's, 129, Cannon Street, E.C.4.

WEST AFRICA.—SURVEY, YOUNG MINING ENGINEER preferred, for mining property. Competent under and above ground. Write age, experience, qualification and salary. Box 375, c/o Dawson's, 129, Cannon Street, E.C.4.

WANTED FOR NIGERIA.—Mining Engineer with geological qualification for small tin mine. Age 26/28, preferably single. Some experience hard rock, addition to alluvial. Initial 18 months tour, usual leave.—Reply to Box No. 510, Mining Journal, 15, George Street, London, E.C.4.

TECHNICAL MINING ASSISTANTS. Vacancies occur with a leading Gold Mining Company in West Africa for Technical Mining Assistants. Applicants preferably should hold a recognized Mining Degree. Permanent employment is offered with tours abroad of 12 months followed by 3 months' leave on full pay. Passages, furnished quarters and medical attention are provided free. There is a Pension Scheme in operation. Write, stating age, experience and salary required to Box 8369 Whites, Ltd., 72/78, Fleet St., London, E.C.4.

CIVIL SERVICE COMMISSION, DUBLIN—Position Vacant

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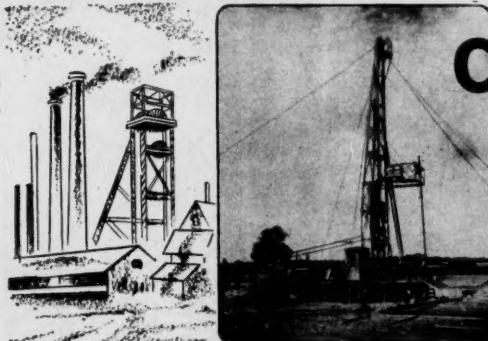


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